

3.43 Test Excavation 147 (T-147)

Ahupua'a:	Honolulu
LCA:	7712:6
TMK#:	2-1-051 [Plat]
Elevation Above Sea Level:	1.55 m
UTM:	618450 mE, 2355756 mN
Max Length/Width/Depth:	6.1 m / 0.60 m / 1.37 m
Orientation:	321 / 141° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 147 (T-147) was located on Halekauwila Street in between the Coral Street and Cooke Street intersections. T-147 was located on land owned by the City and County of Honolulu. An electric line was located 1 m southwest of T-147 and there was a gas line 6.5 m northeast of T-147. The topography of the excavation was level with the surrounding land surface.

Summary of Background Research and Land Use: According to the 1884 Bishop Honolulu map, T-147 was located on land called, 'Pu'unui,' within LCA 7713 (awarded to Victoria Kamāmalu). But according to the Previous Archaeology GDB T-147 was located within LCA 7712:6 (awarded to Mataio Kekūanāo'a). The 1887 Wall Honolulu map and 1897 Monsarrat Honolulu map indicated that urban development started to increase in the vicinity of T-147. The 1919, 1933, and 1943 War maps showed a large increase in urban development surrounding T-147.

Previous archaeological investigations within the vicinity of T-147 included an archaeological monitoring project at the Kaka'ako Improvement District 3 area in which 20 human burials were encountered. Eleven burials (SIHP # 50-80-14-5820) were in and around Mother Waldron Park (SIHP # 50-80-14-1388), directly adjacent to the West Kaka'ako Zone corridor; and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380). In 2009 O'Hare et al. performed an archaeological inventory survey in which material representing a former marsh/pond sediment of the pre-contact and pre-Hawaiian occupation was recovered. Similar results were compiled in 2009 by Tulchin et al. as clay sediments composed of a typical wet, marsh-type environment was encountered. Within the same area in 1998, Hammatt and Chiogioji performed an archaeological assessment of Mother Waldron Playground which indicated that the corner of Halekauwila and Cooke Streets was the reinterment site for twelve burials within a brick lined planting area labeled "KAPU." Near the area Pammer et al. (in progress) completed an archaeological inventory survey which included historic building remnant features (SIHP # -7124), an extensive layer of burnt historic debris (SIHP # -7189), old salt pan remnants (SIHP # - 7190), and a sandy cultural layer containing one pre-contact/early post-contact fire pit feature (SIHP # 7197).

Documentation Limitations: T-147 was excavated to a depth of 1.37 mbs and beneath the water table at 1.32 mbs.

Stratigraphic Summary: The stratigraphy of T-147 consisted of fill strata to the base of excavation. Observed strata included concrete (Ia), sandy loam (Ib), loamy sand (Ic), loamy sand (Id) and sandy clay loam (Ie) to the base of excavation. The stratigraphy was conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of one bulk sediment sample was collected from Stratum Ic from a depth of 0.70 mbs, which contained a broken water-rounded basalt cobble. The results of sample analysis indicate the presence of a possible fire-cracked water-rounded basalt cobble.

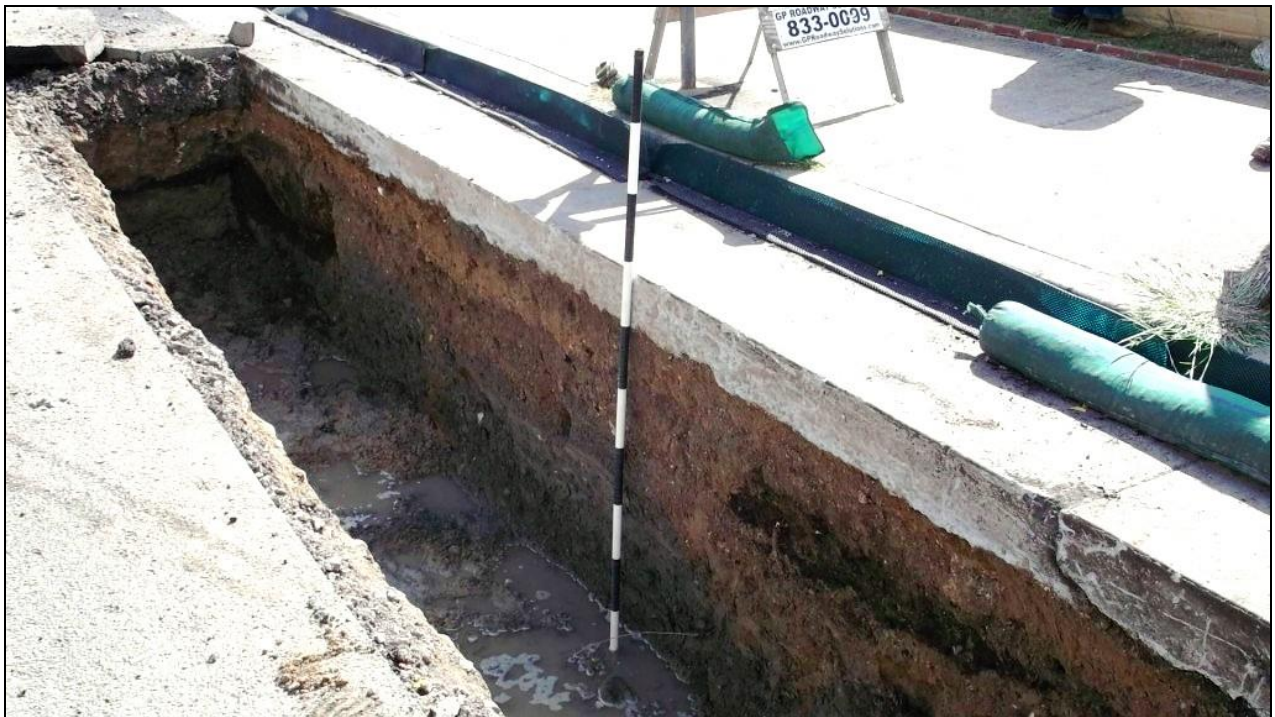
GPR Discussion: A review of amplitude slice maps indicated no linear features although a concrete drain box was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-147 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. No utilities were observed in the profile although a concrete drain box was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

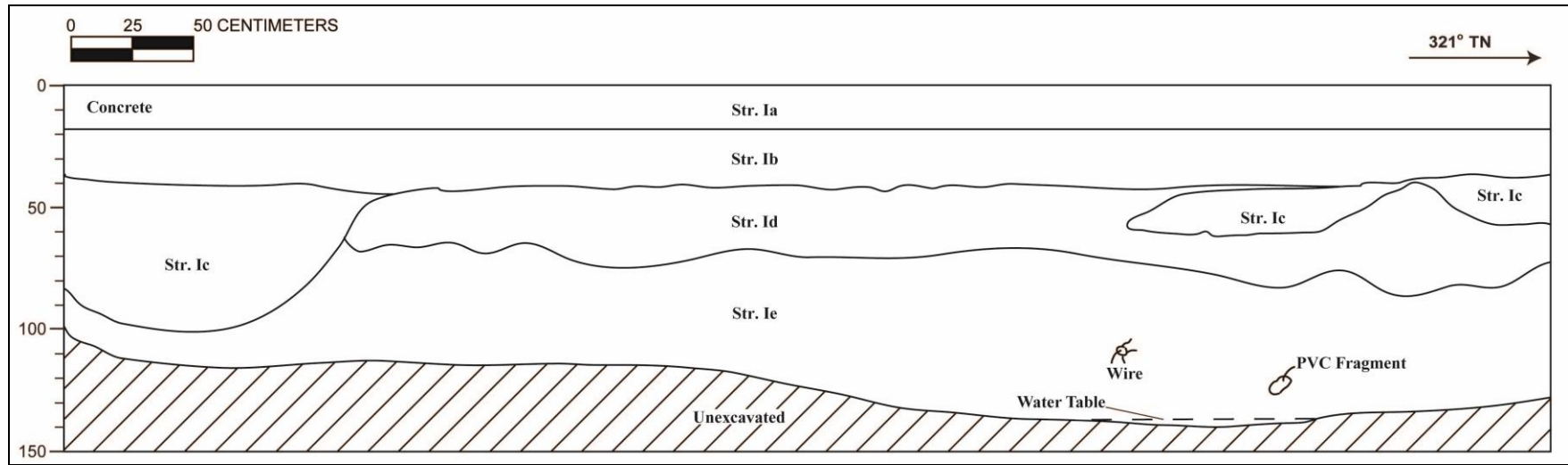
Summary: T-147 was excavated to a depth of 1.37 mbs and beneath the water table at 1.32 mbs. The stratigraphy of T-147 consisted of fill strata (Ia-Ie) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). The results of sample analysis indicate the presence of a possible fire-cracked water-rounded basalt cobble. No natural sediment was observed.



T-147 general location (view to southeast).



T-147 southwest profile wall (view to south).



T-147 Southwest wall profile

T-147 Stratigraphy Description

Stratum	Depth (cmbs)	Description
Ia	0-17	Concrete; sidewalk
Ib	17-44	Fill; 10 YR 5/2 (grayish brown); gravelly sandy loam; structureless, single-grain; loose, weak consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; with 30% gravels
Ic	36-100	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly loamy sand; structureless, single-grain; moist, loose, weak consistency; non-plastic; terrigenous origin; abrupt, irregular, broken/discontinuous lower boundary; very fine, medium roots; rootlets and (1) root present; discontinuous—south end contained ~70% gravel at interface with Id
Id	38-85	Fill; 5 YR 6/1 (gray); gravelly loamy sand; moderate, fine, granular structure; moist, loose consistency; non-plastic; mixed origin; abrupt, wavy lower boundary; with 25% gravels
Ie	60-137	Fill; GLEY 1/4 (dark gray); sandy clay loam; weak, fine, prismatic structure; wet, sticky consistency; mixed origin; lower boundary not visible; contained piece of PVC pipe, piece of wire

3.44 Test Excavation 148 (T-148)

Ahupua'a:	Honolulu
LCA:	7712:6
TMK#:	2-1-051
Elevation Above Sea Level: -	1.57 m
UTM:	618450 mE, 2355756 mN
Max Length/Width/Depth:	3.05 m / 0.96 m / 0.55 m
Orientation:	146 / 326° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 148 (T-148) was located on Halekauwila Street 13 m northwest of the Cooke Street intersection. T-148 was located on private property owned by the City of Honolulu. There was a sewer manhole observed 6.8 m west of T-148 and no other utilities were observed. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: T-148 was located within LCA 7712:6 (awarded to Mataio Kekūānao'a). The 1887 Wall Honolulu map and 1897 Monsarrat Honolulu map indicated that urban development started to increase in the vicinity of T-148. The 1919, 1933, and 1943 War maps showed a large increase in urban development surrounding T-148.

Previous archaeological investigations within the vicinity of T-148 included an archaeological monitoring project at the Kaka'ako Improvement District 3 area in which 20 human burials were encountered. Eleven burials (SIHP # 50-80-14-5820) were in and around Mother Waldron Park (SIHP # 50-80-14-1388), directly adjacent to the West Kaka'ako Zone corridor; and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380). In 2009 O'Hare et al. performed an archaeological inventory survey in which material representing a former marsh/pond sediment of the pre-contact and pre-Hawaiian occupation was recovered. Similar results were compiled in 2009 by Tulchin et al. as clay sediments composed of a typical wet, marsh-type environment was encountered. Within the same area in 1998, Hammatt and Chiogioji performed an archaeological assessment of Mother Waldron Playground which indicated that the corner of Halekauwila and Cooke Streets was the reinterment site for twelve burials within a brick lined planting area labeled "KAPU." Near the area Pammer et al. (in progress) completed an archaeological inventory survey which included historic building remnant features (SIHP # -7124), an extensive layer of burnt historic debris (SIHP # -7189), old salt pan remnants (SIHP # - 7190), and a sandy cultural layer containing one pre-contact/early post-contact fire pit feature (SIHP # 7197).

Documentation Limitations: T-148 was excavated to a depth of 0.55 mbs. Excavation of T-147 could not be completed do to the presence of two PVC electrical lines overlying a concrete jacket. The PVC pipes were encountered at 0.46 mbs and extended parallel through T-148 from 0.46-0.52 mbs. directly overlying a concrete jacket.

Stratigraphic Summary: The stratigraphy of T-148 consisted of fill strata to the base of excavation. Observed strata included asphalt (Ia) and loam fill (Ib) to the base of excavation. The stratigraphy was consistent with the USDA soil survey designation of Fill land (FL).

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

GPR Discussion: A review of amplitude slice maps indicated linear features but not within excavation boundaries. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the linear features. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-148 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.4 mbs. No utilities were observed in the profile although several were encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

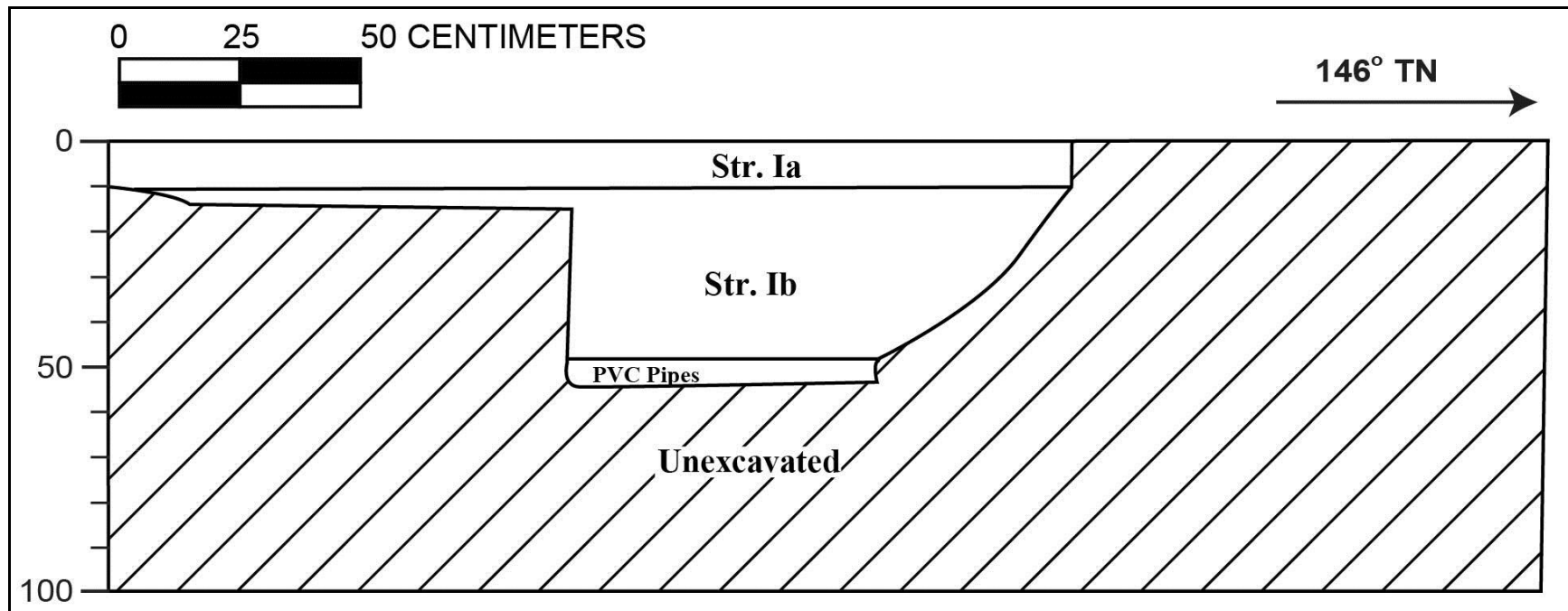
Summary: T-148 was excavated to a depth of 0.55 mbs. Excavation of T-147 could not be completed due to the presence of two PVC electrical lines overlying a concrete jacket. The stratigraphy of T-148 consisted of fill strata (Ia and Ib) to the base of excavation. The stratigraphy was consistent with the USDA soil survey designation of Fill land (FL). No cultural resources were identified within T-148.



T-148 general location (view to south).



T-148 northeast profile wall (view to southeast)



T-148 northeast wall profile

T-148 Stratigraphic Description of northeast wall.

Stratum	Depth (cmbs)	Description
Ia	0-11	Asphalt
Ib	11-55	Fill; 5 YR 3/1 (very dark gray); loam; strong, very fine, granular structure; moist, friable consistency; slightly plastic; terrigenous origin; lower boundary not visible

3.45 Test Excavation 148A (T-148A)

Ahupuaa:	Honolulu
LCA:	7712:6
TMK#:	2-1-051
Elevation Above Sea Level:	1.5 m
UTM:	618455.436 mE, 2355734.359 mN
Max Length/Width/Depth:	2.56 m / 0.95 m / 1.15 mbs
Orientation:	142 / 322° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Ewa silty clay loam (EmA)

Setting: T-148A was located on the north sidewalk of Halekauwila Street 10 m northwest of the Cooke Street intersection. T-148A was located on property owned by City of Honolulu. The original T-148 encountered a subsurface concrete jacket and could not be completely excavated. T-148A was an additional excavation added to further investigate and delineate the boundaries of a subsurface cultural deposit (SIHP # 50-80-14-5820). T-148A also investigated a guideway column location. T-148A was located 2.5 m northeast of a sewage utility line, 4 m northeast of a water utility line, and directly on top of two electrical utility lines. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: T-148A was located within LCA 7712:6 (awarded to Mataio Kekūanao'a). The 1887 Wall Honolulu indicated that urban development just barely started to emerge in area surrounding T-148A. By 1897, there was heavy urban development in the vicinity of T-148A (roads, school to northwest) (1897 Monsarrat Honolulu). Urban development continues to increase according to the 1919 and 1933 War maps. The 1953 Army Mapping Service Honolulu map indicated that T-148A was located within its modern location—Mother Waldron Park.

Previous archaeological investigations within the vicinity of T-148 included an archaeological monitoring project at the Kaka'ako Improvement District 3 area in which 20 human burials were encountered. Eleven burials (SIHP # 50-80-14-5820) were in and around Mother Waldron Park (SIHP # 50-80-14-1388), directly adjacent to the West Kaka'ako Zone corridor; and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380). In 2009 O'Hare et al. performed an archaeological inventory survey in which material representing a former marsh/pond sediment of the pre-contact and pre-Hawaiian occupation was recovered. Similar results were compiled in 2009 by Tulchin et al. as clay sediments composed of a typical wet, marsh-type environment was encountered. Within the same area in 1998, Hammatt and Chiogioji performed an archaeological assessment of Mother Waldron Playground which indicated that the corner of Halekauwila and Cooke Streets was the reinterment site for twelve burials within a brick lined planting area labeled "KAPU." Near the area Pammer et al. (in progress) completed an archaeological inventory survey which included historic building

remnant features (SIHP # -7124), an extensive layer of burnt historic debris (SIHP # -7189), old salt pan remnants (SIHP # - 7190), and a sandy cultural layer containing one pre-contact/early post-contact fire pit feature (SIHP # 7197).

Documentation Limitations: T-148A was excavated to a depth of 1.15 mbs. A concrete jacket, encompassing the entire excavation area, was encountered at 1.15 mbs and limited excavation.

Stratigraphic Summary: The stratigraphy of T-148A consisted of fill strata to the base of excavation. Observed strata included cement (Ia) and sandy clay loam (Ib) overlying a concrete jacket to the base of excavation. The stratigraphy did not conform to the USDA soil survey designation because a concrete jacket prevented the complete excavation of T-148A down to the strata that would have contained natural sediment.

Artifacts Discussion: Ten (10) historic artifacts (Acc. # 148A-A-1 to A-8, see following table and photographs) were collected from Stratum Ib, 1.4 mbs. These consisted of three ceramic fragments from two vessels, six bottle fragments from a minimum of four bottles and one bone toothbrush handle. One beer bottle was dated to 1881 to 1905 and one spirits bottle was made between the 1880s to the 1920s. Artifacts collected from Stratum Ib indicate a fill event in the late nineteenth-early twentieth century.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: Faunal remains were collected individually during excavation from the spoil bin but within the Ib matrix (0.38-1.4 mbs). These consisted of a *Bos taurus* rib fragment; the right tibia (distal portion) and 3rd metatarsus of a *Canis lupus familiaris*; and a *Gallus gallus* left tarsometatarsus fragment. The *Bos taurus* rib was butchered with a metal blade, indicating an historic origin (not traditional Hawaiian).

Sample Results: No sample analysis was conducted.

GPR Discussion: A review of amplitude slice maps indicated no linear features although a concrete jacket was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-148A identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. The maximum depth of clean signal return was approximately 1.0 mbs.

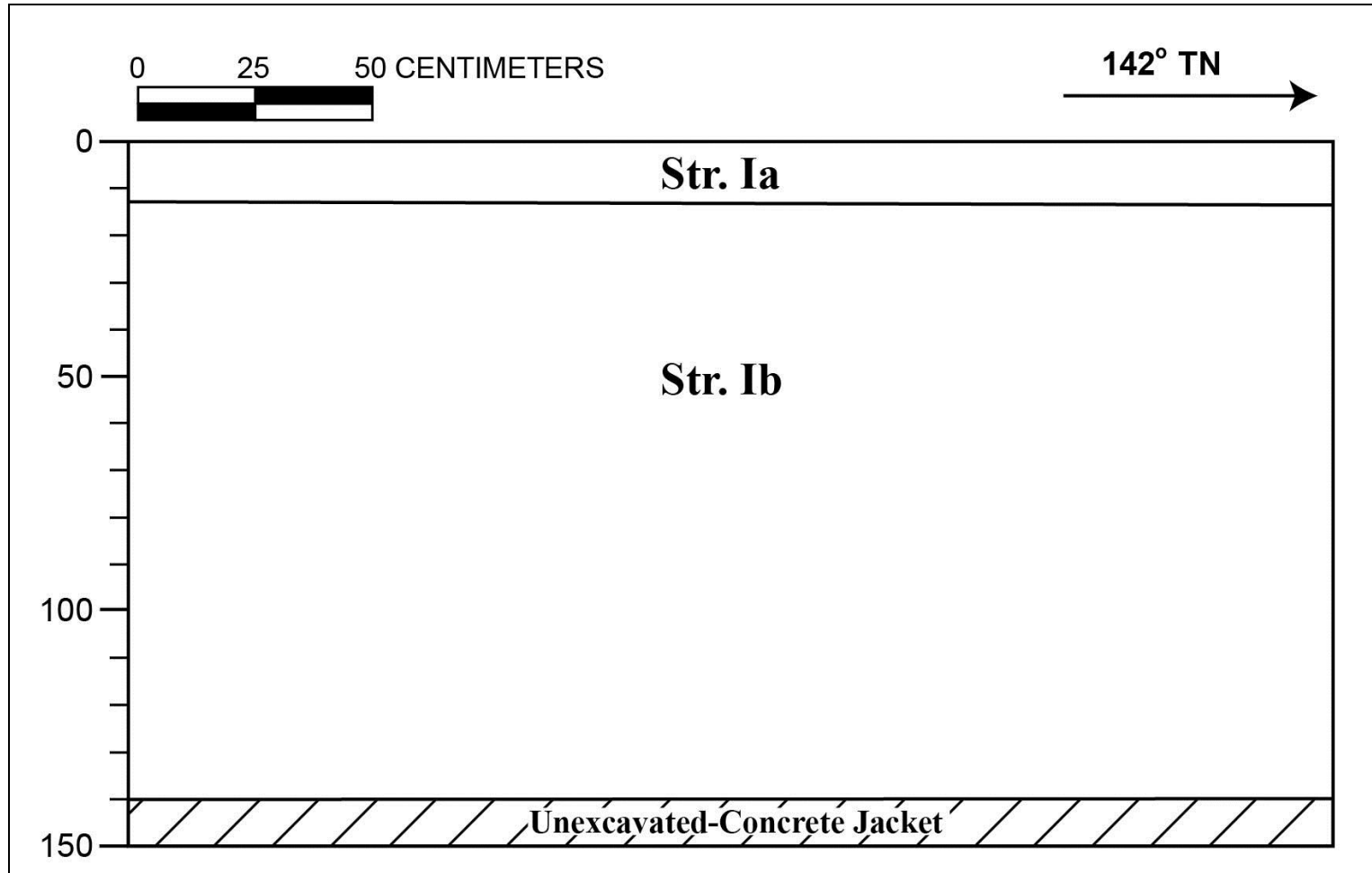
Summary: T-148A was excavated to a depth of 1.15 mbs. The stratigraphy of T-148A consisted of fill strata (Ia-Ib) to the base of excavation. The stratigraphy did not conform to the USDA soil survey designation because a concrete jacket prevented the complete excavation of T-148A down to the strata that would have contained natural sediment. Artifacts collected from Stratum Ib indicate a fill event in the late nineteenth-early twentieth century. The *Bos taurus* rib was butchered with a metal blade, indicating an historic origin (not traditional Hawaiian). No natural sediment was observed.



T-148A General location (view to southeast).



T-148A Northeast profile wall (view to north).



T-148A northeast wall profile.

T-148A Stratigraphic Description for northeast wall.

Stratum	Depth (cmbs)	Description
Ia	0-14	Concrete; cement sidewalk
Ib	14-115	Fill; 7.5 YR 6/2 (pinkish gray); gravelly sandy clay loam; mixed origin; abrupt, smooth lower boundary; common, fine to medium roots; contained old metal pipe, faunal , bottle glass, ceramic; asphalt boulders, coral gravel to small cobbles, construction backfill

T-148A Artifact Analysis

Acc. # 148A-A-	Provenience	Ceramic Vessel Type	Portion	No.	Paste; Decor.	Origin; Age	Comments
1	T-148A, St. Ib	Hollow-ware - cup	Body to rim	1	Porcelain; Painted underglaze		Blue leaves
2	T-148A, St. Ib	Dinner-ware	Body to rim	2	Porcelain; Painted underglaze		Green leaves, black stems, large flowers; red bank on ext. & int. rim
Acc. # 148A-A-	Provenience	Glass Bottle Type	Portion	No.	Color	Origin; Age	Comments
3	T-148A, St. Ib	Bottle, Spirits	Complete	1	Olive, Dark	1880s-1920s	Push-up; beveled lip edge
4	T-148A, St. Ib	Bottle	Body	1	Amber		
5	T-148A, St. Ib	Bottle, Beer	Base	1	Amber	American ; 1870s-post	Streator Bottle & Glass Co., Streator, Ill. Base mark
6	T-148A, St. Ib	Bottle, Gin	Base	2	Black	pre-1890s	Possible glass pontil; edges flat
7	T-148A, St. Ib	Bottle, Spirits	Base-body	1	Olive	pre-1920	Kick-up
Acc. # 148A-A-	Provenience	Misc. Type	Portion	No.	Material	Origin; Age	Comments
8	T-148A, St. Ib	Tooth-brush	Handle	1	Bone		Hole at one end; incised circles near head



T-148A ceramic fragments (Acc. # 148A-A-1 to A-2) from Stratum Ib



T-148A ceramic artifact (Acc. # 148A-A-1 to A-2) – obverse- from Stratum Ib



T-148A glass bottle/bottle fragments (Acc. # 148A-A-3 to A-7) from Stratum Ib



T-148A bone toothbrush handle (Acc. # 148A-A-8) from Stratum Ib

3.46 Test Excavation 149 (T-149)

Ahupua'a:	Honolulu
LCA:	1503:2
TMK#:	2-1-050:007
Elevation Above Sea Level:	1.49 m
UTM:	618510 mE, 2355725 mN
Max Length/Width/Depth:	6.72 m / 0.73 m / 1.90 mbs
Orientation:	012 / 192° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 149 (T-149) was located within the sidewalk at the Halekauwila Street and Cooke Street intersection. T-149 was 28 m east of the historic Mother Waldron Park. T-149 was 2 m northeast of a fire hydrant and 2.3 m east of an electric line. T-149 was in public property owned by the City and County of Honolulu. The excavation surface was level with the surrounding topography.

Summary of Background Research and Land Use: According to Bishop's 1884 Honolulu and Kewalo map, T-149 was within LCA 1503:2, 480 m northeast of the shoreline. LCA 1503:2 contained one house lot and three fishponds. The surrounding area was a wetland setting that supported multiple other LCAs. Wall's 1887 map of Honolulu indicated little development with major roads and areas concentrated to the north and west of T-149. Some minor structures dotted the landscape. By 1897 development of street grids was beginning and T-149 was at the southern end of Cooke Street (Monsarrat 1897 map of Honolulu RM1910). Between 1919 and 1943 the area experienced heavy urban development with new structures, streets, industrial areas, and the expansion of the shoreline (1919, 1933, and 1943 Honolulu War maps). The 1953 Army Mapping Service map of Honolulu showed T-149 within an urbanized setting. The 1927 and 1952 University of Hawaii SOEST Kaka'ako aerial photographs and the 1939-41 Army Air Corps aerial photograph series indicated T-149 was in a residential area for several years. The 1970 University of Hawaii SOEST Kaka'ako aerial showed the area becoming industrialized and more representative of the present day setting.

Several previous archaeology studies were conducted within the vicinity of T-149. Winieski and Hammatt (2000b) performed archaeological monitoring along Halekauwila Street and neighboring cross streets for the Kaka'ako Improvement District 3 project, the Pohulani housing project, and the Kauhale Kaka'ako project areas. During monitoring a total of 20 human burials were encountered. Eleven burials were found near or within Mother Waldron Park (SIHP # 50-80-14-5820). T-149 was 28 m east of the historic Mother Waldron Park (SIHP -01388). A pre to post-Contact subsurface cultural deposit and nine burials were encountered within the Pohulani Elderly Rental Housing Facility (SIHP # 50-80-14-4380). Dagher and Spear (2013) documented an inadvertent human burial find 5 m southeast of T-149. The burial was a previously *in situ* pre-

Contact burial encountered during construction activities. The burial was designated as SIHP # 50-80-14-7260.

Documentation Limitations: T-149 was excavated to a depth of 1.9 mbs, and beneath the water table at 1.75 mbs. A concrete utility jacket was encountered at 1.75 mbs and extended along the eastern side of T-149. A utility jacket at 0.15 mbs prevented excavation in the north end of T-149. To avoid damaging a fire hydrant utility the excavation was limited to 1.0 mbs in the south end of T-149.

Stratigraphic Summary: The stratigraphy consisted entirely of fill material. Observed strata included concrete (Ia), extremely gravelly loam base course (Ib), very gravelly loam (Ic), very gravelly silty sand (Id), very gravelly loam (Ie), sandy clay (If), fine grained sand (Ig), and a gravelly medium grained sand (Ih). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: Six (6) historic artifacts (Acc. # 149-A-1 to A-6, see following photographs) were collected from T-149. One glass vial, one glass bottle, made after the 1870s, and a ceramic marble were collected from Stratum Ib. One medicine bottle, dated to 1854-1925, and two brick fragments were collected from Stratum Ie. The brick fragments were dated to 1886-1918, and ca. 1900. Artifacts collected from Strata Ib and Ie indicated a late nineteenth century to early twentieth century date for the fill.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: Faunal remains were collected individually during excavation from Strata Ib (0.45-0.55 mbs) and Ie (0.50-1.1 mbs). Species represented in Ib consisted of: butchered (with a metal blade) *Bos taurus*, *Sus scrofa* (possible) with perimortem trauma, and unmodified *Felis catus* (possible) skeletal elements. The *Bos taurus* skeletal elements had been butchered by a metal blade, indicating an historic origin (not traditional Hawaiian). Stratum Ie contained *Bos taurus* skeletal elements which had been butchered by a metal blade, indicating an historic origin (not traditional Hawaiian) for that stratum as well.

Sample Results: No sample analysis was conducted.

GPR Discussion: A review of amplitude slice maps indicated no linear features although a utility jacket was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-149 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.35 mbs. Several Anomalies were observed on the profile and one seems to correspond to the utility jacket encountered during excavation. The maximum depth of clean signal return was approximately 1.15 mbs.

Summary: T-149 was excavated to a depth of 1.9 mbs, and beneath the water table at 1.75 mbs. The stratigraphy of T-149 consisted entirely of fill material (Ia-Ih). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). Artifacts collected from strata Ib and Ie

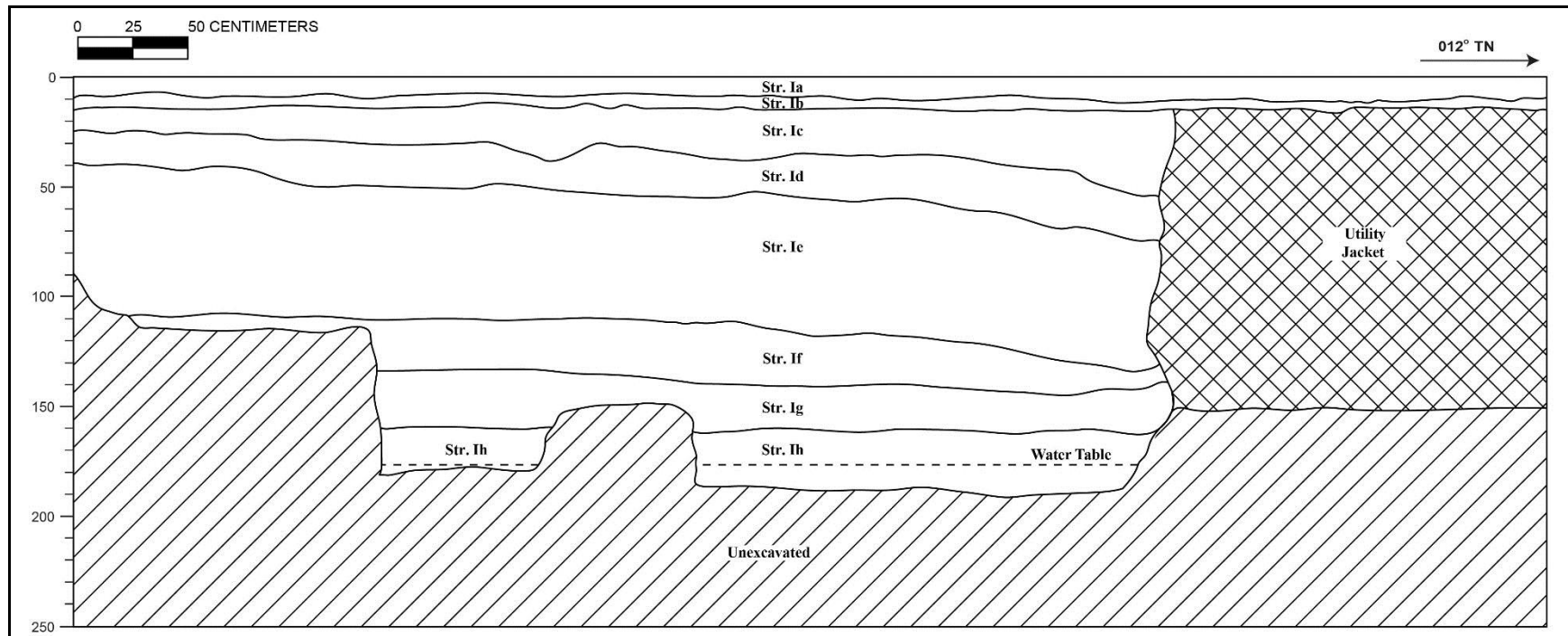
indicated a late nineteenth century to early twentieth century date for the fill. The faunal remains from Strata Ib and Ic were considered to be food remnants incorporated into the fill layers. No natural sediments were observed. No cultural resources were identified.



T-149 general location showing reinterment area in foreground, view to east.



T-149 west profile wall (view to northeast).



T-149 west wall profile.

T-149 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-15	Fill; 10 YR 5/1 (gray); extremely gravelly loam; structureless, single-grain; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	15-53	Fill; 2.5 Y 4/2 (dark grayish brown); very gravelly loam; weak, medium, blocky structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary
Id	25-75	Fill; 2.5 Y 7/4 (pale yellow); very gravelly silty sand; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary
Ie	40-130	Fill; 7.5 YR 3/2 (dark brown); very gravelly loam; weak, medium, granular structure; moist, friable consistency; slightly plastic; terrigenous origin; smooth lower boundary
If	110-145	Fill; 2.5 Y 4/2 (dark grayish brown); sandy clay; weak, fine, crumb structure; moist, friable consistency; plastic; terrigenous origin; abrupt, smooth lower boundary
Ig	135-160	Fill; 10 YR 5/4 (yellowish brown); fine sand; structureless, single-grain; moist, friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary
Ih	160-190	Fill; 2.5 Y 6/4 (light yellow brown); gravelly medium grain sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; locally procured sand fill with coral



T-149 glass vial (Acc. # 149-A-1) bottle artifact from Stratum Ib



T-149 glass bottle (Acc. # 149-A-2) from Stratum Ib

3.47 Test Excavation 150 (T-150)

Ahupua'a:	Honolulu
LCA:	1503:2 & 7712:1
TMK#:	2-1-050:067
Elevation:	1.46 m
UTM:	618503 mE, 2355689 mN
Max Length/Width/Depth:	6.75 m / 0.73 m / 1.75 mbs
Orientation:	315 / 135° TN
Targeted Project Component:	Utility relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 150 (T-150) was in the sidewalk along the eastbound side of Halekauwila Street. T-150 was near the intersection of the Halekauwila Street and Cooke Street intersection. T-150 was 31 m east of the historic Mother Waldron Park and was within private property. Nearby utilities included at sewer and electric line 1.5 m west, and a sewer line 2.8 m east of T-150. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: The 1883 Baldwin map shows T-150 near the northern edge of possible salt pans. According to Bishop's 1884 Honolulu and Kewalo, T-150 was within LCA 1503:2, 472 m northeast of the shoreline. LCA 1503:2 contained one house lot and three fishponds. The surrounding area was a wetland setting that supported multiple other LCAs. Wall's 1887 map of Honolulu indicated little development with major roads and areas concentrated to the north and west of T-150. Some minor structures dotted the landscape. By 1897 development of street grids was beginning and T-150 was near the southern end of Cooke Street (Monsarrat 1897 map of Honolulu RM1910). Between 1919 and 1943 the area experienced heavy urban development with new structures, streets, industrial areas, and the expansion of the shoreline (1919, 1933, and 1943 Honolulu War maps). The 1953 Army Mapping Service map of Honolulu showed T-150 within an urbanized setting. The 1927 and 1952 University of Hawaii SOEST Kaka'ako aerial photographs and the 1939-41 Army Air Corps aerial photograph series indicated T-150 was in a residential area for several years. The 1970 University of Hawaii SOEST Kaka'ako aerial showed the area becoming industrialized and more representative of the present day setting.

Several previous archaeology studies were conducted within the vicinity of T-150. Winieski and Hammatt (2000b) performed archaeological monitoring along Halekauwila Street and neighboring cross streets for the Kaka'ako Improvement District 3 project, the Pohulani housing project, and the Kauhale Kaka'ako project areas. During monitoring a total of 20 human burials were encountered. Eleven burials were found near or within Mother Waldron Park (SIHP # 50-80-14-5820). T-150 was 31 m east of the historic Mother Waldron Park (SIHP -01388). A pre to post-Contact subsurface cultural deposit and nine burials were encountered within the Pohulani Elderly Rental Housing Facility (SIHP # 50-80-14-4380). Dagher and Spear (2013) documented an inadvertent human burial find 15 m northeast of T-150. The burial was a previously *in situ*

pre-Contact burial encountered during construction activities. The burial was designated as SIHP # 50-80-14-7260.

Documentation Limitations: T-150 was excavated to a depth of 1.75 mbs, and beneath the water table at 1.7 mbs. Human remains were encountered at 0.95 mbs (Feature 1).

Stratigraphic Summary: The stratigraphy for the northeast and southwest wall consisted of fill overlying natural sediments. Observed strata consisted of concrete sidewalk (Ia), extremely gravelly silty clay (Ib), gravelly silt loam (Ic), natural loamy sand (II), natural fine to coarse grained Jaucas sand (IIIa), very fine to fine grained Jaucas sand (IIIb), medium to very coarse grained Jaucas sand (IIIc). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: Three traditional Hawaiian artifacts (Acc. # 150-H-1 to H-3) were observed in Stratum II. A human bone tool (see below) and a basalt tool fragment were found within Feature 18. One piece of volcanic glass debitage was found in Feature 20 (see below). Three brick fragments (Acc. # 150-A-1 to A-3) were collected from Stratum Ic. Two of the brick fragments had datable attributes and indicated the bricks were likely manufactured from 1918 to 1978.

Features Discussion: A total of three features (Feature 18-20) were observed within T-150. The features originated in Stratum II (buried A-horizon) and extended into the underlying natural Jaucas sand (IIIa). Features 18-20 are considered to be features of SIHP# 50-80-14-5820, a buried, culturally-enriched A-horizon.

SIHP# -5820 Feature 18 was interpreted as a pit of indeterminate function. Feature 18 originated at 0.75 mbs and terminated at 1.05 mbs. Feature 18 was irregular-shaped in plan view and extended beyond the width of the excavation. Feature 18 was charcoal stained and contained marine shell midden, fire-cracked rock, a fragment of a stone tool, and a fragment of a possibly worked human proximal tibia. The bone fragment, found in Feature 18 at 95 cmbs, is approximately 9 cm long, 2.5 cm wide, 0.5 to 1 cm thick. It appeared to have been filed at one end, perhaps to control breakage for tool manufacture. CSH staff osteologist indicated that the fragment was difficult to conclusively identify; observable surface morphology and muscle attachments were most consistent with a portion of proximal posterior shaft of a human tibia (refer to Figure 10). Based on the stratigraphic context of the fragment, including the associated cultural material with Stratum II, the bone fragment was most likely Native Hawaiian. A 49 liter screen from 0.7-1.05 mbs was completed on site (see Sample Results below).

SIHP# -5820 Feature 19 was interpreted as a pit of indeterminate function. Feature 19 originated at 0.53 mbs and terminated at 0.95 mbs. The upper portion was truncated and overlain by historic fill (Ic). Feature 19 was irregular-shaped in plan view and extended beyond the width of the excavation. Feature 19 was charcoal stained and contained marine shell midden, fish bone, and fire-cracked rock. A bulk sample was collected from 0.7-0.75 mbs (see Sample Results below).

SIHP# -5820 Feature 20 originated at 0.9 mbs and terminated at 1.30 mbs. Feature 20 was charcoal stained and contained marine shell midden. A bulk sample was collected from 0.9-1.3 mbs (see Sample Results below). Feature 20 was interpreted as a pit of indeterminate function.

Terrestrial Faunal Remains Collected During Excavation: Faunal remains were collected individually during excavation from Stratum II (0.90-1.1 mbs). The remains consisted of

unmodified *Sus scrofa* and *felis catus* (possible) skeletal elements. The possible presence of introduced species (*felis catus*) places Stratum II within the post-Contact period. Stratum II of T-150 was associated with the culturally enriched A-horizon of SIHP# 50-80-14-5820

Sample Results: A total of two bulk sediment samples and five general screened samples were collected from Stratum II. In addition, a screened sample was collected from Stratum II (Feature 18) at 0.7-1.04 mbs. The sample was wet-screened and no material was collected.

A bulk sediment sample and screened sample were collected from Stratum II (Feature 19) at 0.7-1.05 mbs. The samples were wet-screened and contained charcoal (4.5 g), Hipponicidae *Hipponix* sp. (0.1 g), Melampidae *Melampus castaneus* (0.3 g), Naticidae (0.1 g), Neritidae *Nerita picea* (35.3 g), Neritidae, operculum (3.2 g), Strombidae *Strombus* sp. (20.5 g), Strombidae (2.4 g), Mytilidae *Brachidontes crebristriatus* (11.2 g), burned shell (10.1 g), Tellinidae *Tellina* sp. (7.1 g), Turbinidae *Turbo* sp. (5.8 g), and crustacean (2.5 g).

A bulk sediment sample was collected from Stratum II (Feature 20) at 0.9-1.3 mbs. The sample was wet-screened and contained charcoal (0.7 g), Hipponicidae *Hipponix* sp. (0.8 g), Columbidae (0.2 g), Melampidae *Melampus castaneus* (0.1 g), Turbinidae *Turbo sandwicensis* (0.1 g), a volcanic glass fragment (0.1 g), and fish remains (0.2 g).

A screened sample was collected from Stratum II at 0.76-0.87 mbs. The sample was wet-screened and contained basalt gravel (30.8 g), Neritidae *Nerita picea* (5.7 g), Conidae *Conus* sp. (2.9 g), Isognomidae *Isognomon* sp. (0.6 g), and Mytilidae *Brachidontes crebristriatus* (0.2 g).

A screened sample was collected from the southeast end of T-150 within Stratum II at 0.65-0.94 mbs. The sample was wet-screened and contained fish remains (1.6 g), basalt gravel (48.4 g), Turbinidae *Turbo sandwicensis* (31.8 g), Strombidae *Strombus* sp. (21.0 g), Cymatiidae (7.1 g), Neritidae *Nerita picea* (4.7 g), Mytilidae *Brachidontes crebristriatus* (2.2 g), Echinodermata *Heterocentrotus mammillatus* (1.9 g), Echinodermata (0.7 g), crustacean (0.4 g), and fish remains (0.2 g).

A screened sample was collected from Stratum II at 0.8-0.9 mbs. The sample was wet-screened and no material was collected.

Charcoal samples from Feature 19 (0.7-1.05 mbs) and Feature 20 (0.9-1.3 mbs) were sent for wood taxa identification. Wood taxa identification results indicated the presence of indigenous and Polynesian introduced species. Feature 19 contained *kukui* (*Aleurites moluccana*), 'ilima (cf. *Sida fallax*), 'āheahea and 'āweoweo (*Chenopodium oahuense*), and monocot. Feature 20 contained *kukui* (*Aleurites moluccana*). Samples from Feature 19 and 20 were also sent for C14 radiocarbon dating. Radiocarbon analysis yielded a calibrated 2-sigma date of AD 1810 to AD 1920 (67.1%) for Feature 19 and a 2-sigma date of AD 1630 to AD 1690 (51.3%) for Feature 20.

Volcanic glass from the sample of Stratum II (Feature 19) at 0.9-1.3 mbs was sent for EDXRF analysis. Specific source information is not available; however the volcanic glass sample clearly does not match sources from Hawaii County. The sample is from "Group 1", one of two distinct geochemical groups identified from the 35 City Center AIS EDXRF volcanic glass samples, likely representing different volcanic sources on O'ahu (see EDXRF discussion in Volume V).

The results of sample analysis indicated that the upper boundary of Stratum II (the former land surface) was historically impacted within T-150, whereas portions of the lower boundary

remained *insitu*. The presence of midden and volcanic glass was potential evidence supporting a pre- and/or early post-Contact traditional utilization of the former land surface. The absence of historic artifacts and historically-introduced taxa within Feature 19 and Feature 20 indicated that the lowest deposits within the former land surface were undisturbed during the post-Contact era. Radiocarbon analysis supports this assertion, results of radiocarbon dating has yielded a calibrated 2-sigma date of AD 1810 to AD 1920 (67.1%) for Feature 19 and a 2-sigma date of AD 1630 to AD 1690 (51.3%) for Feature 20. These results substantiate that Stratum II contains both historically impacted sediment and *insitu* natural sediments related to pre-Contact land use.

GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-150 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs and again at approximately 0.6 mbs. An anomaly was observed in the profile but was not within excavation boundaries. The maximum depth of clean signal return was approximately 1.1 mbs.

Summary: T-150 was excavated to a depth of 1.75 mbs, and beneath the water table at 1.70 mbs. The stratigraphy for the northeast and southwest wall consisted of fill (Ia-Ic) overlying natural sediments (IIIa-IIIc). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). Artifact analysis indicated two brick fragments from Stratum Ic were likely manufactured from 1918 to 1978. Stratum II was a truncated, culturally enriched A-horizon that contained features 18-20. Feature 18 contained a worked human tibia fragment. Faunal remains collected from Stratum II at 0.9-1.10 mbs consisted of *Sus scrofa*, and medium mammal. The results of sample analysis indicated that the upper boundary of Stratum II (the former land surface) was historically impacted within T-150, whereas portions of the lower boundary remained *insitu*. Radiocarbon analysis supports this assertion, results of radiocarbon dating has yielded a calibrated 2-sigma date of AD 1810 to AD 1920 (67.1%) for Feature 19 and a 2-sigma date of AD 1630 to AD 1690 (51.3%) for Feature 20. These results substantiate that Stratum II contains both historically impacted sediment and *insitu* natural sediments related to pre-Contact land use. Stratum II was designated a component of SIHP #50-80-14-5820 (see Volume I for further discussion of all historic properties).



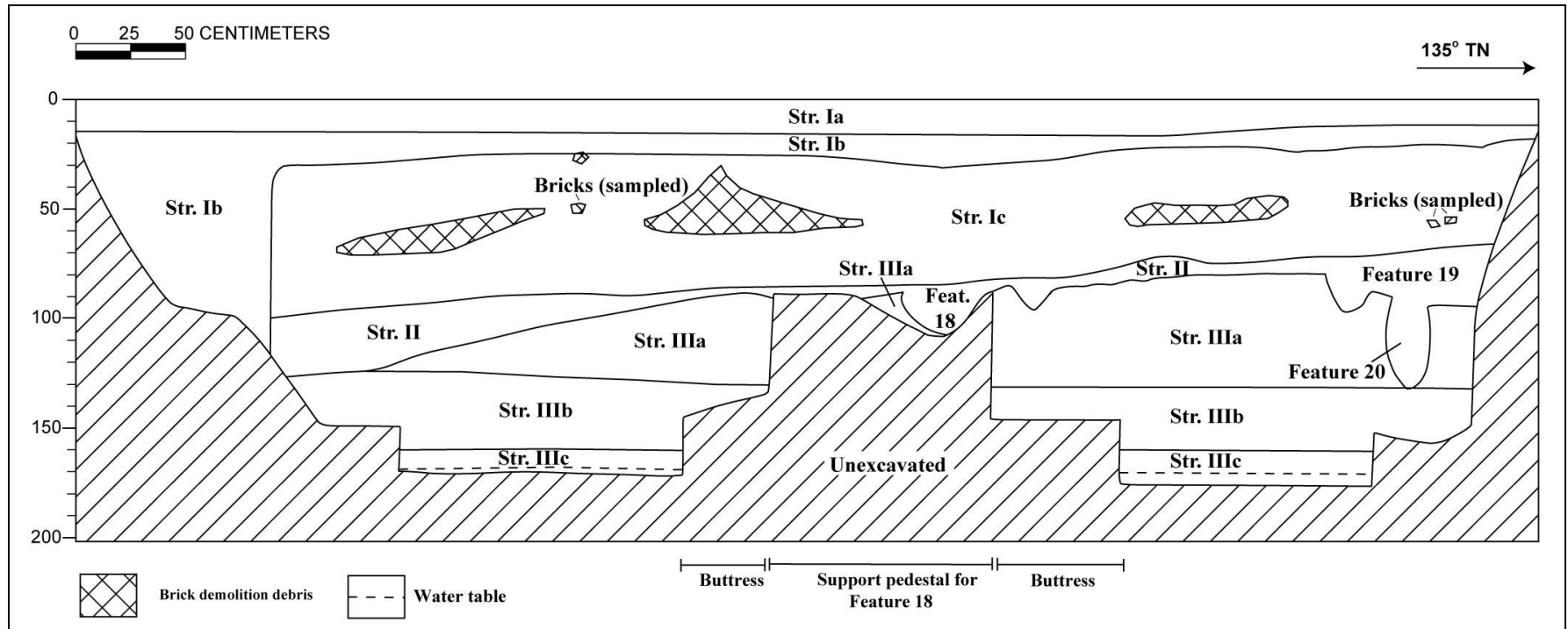
T-150 general location showing a previous reinterment location at Mother Walkdron Park in foreground, view to southeast



T-150 southwest profile wall, view to south



T-150 northeast profile wall showing SIHP# -5820 Feature 19 and 20, view to east



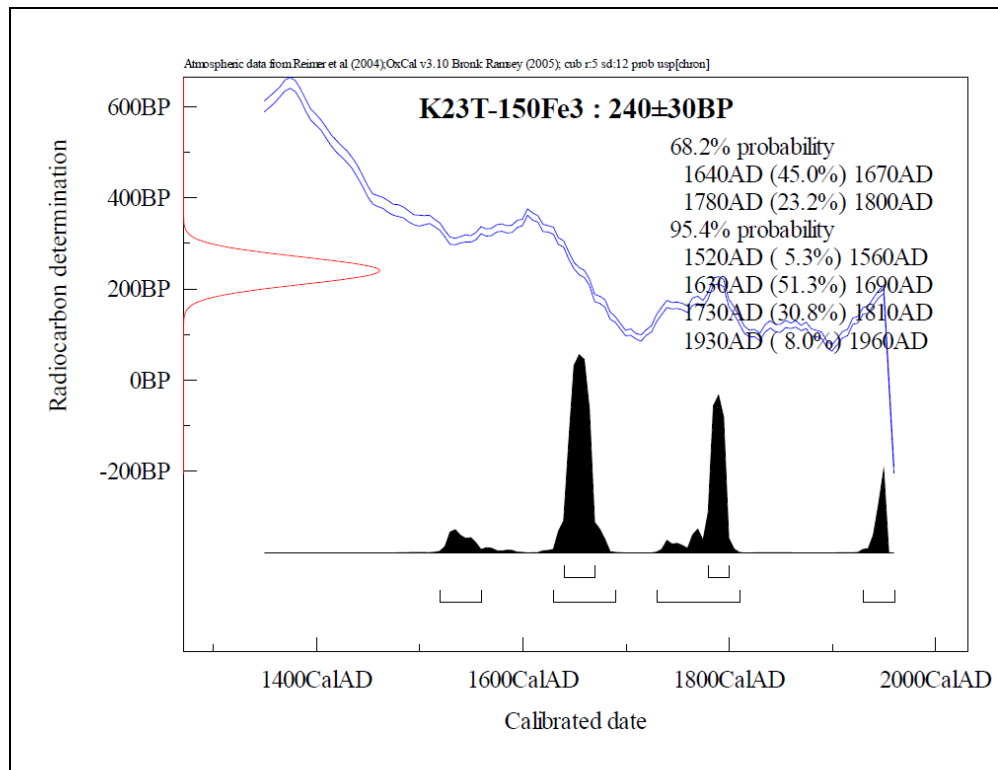
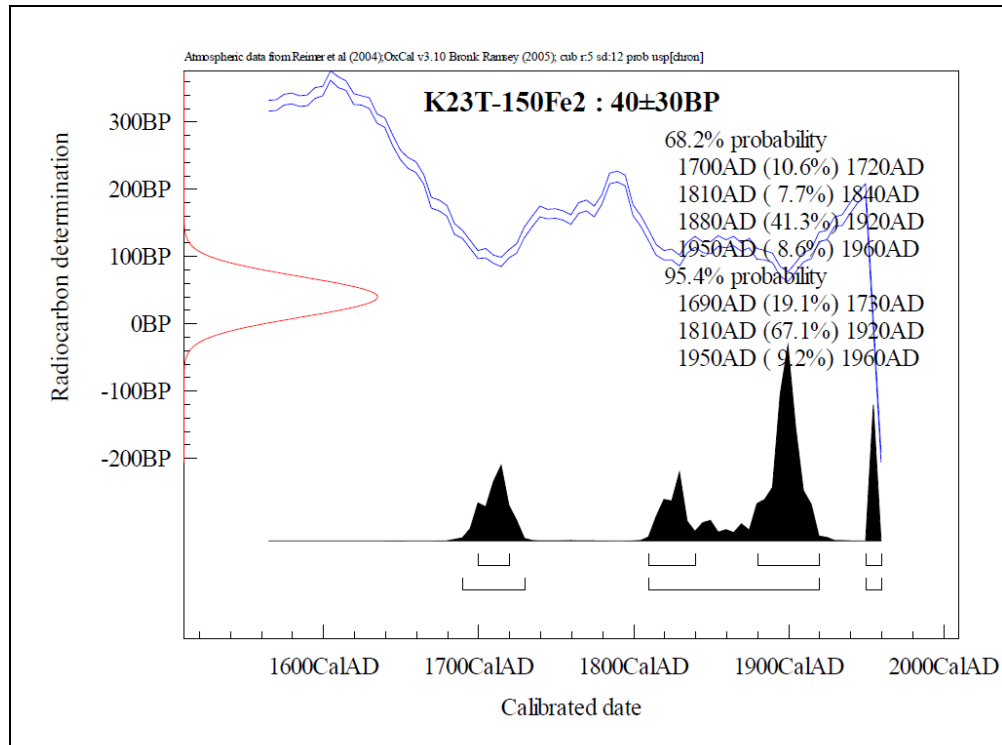
T-150 northeast wall profile showing SIHP# -5820 Features 18-20

T-150 Stratigraphic Description for northeast wall Profile

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	10-116	Fill; GLEY 1 5/N (gray); extremely gravelly silty clay; weak, medium, crumb structure; moist, very friable consistency; plastic; mixed origin; clear, wavy lower boundary; gravel base course
Ic	16-100	Fill; 7.5 YR 4/2 (brown); gravelly silt loam; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; contained brick, metal, coral inclusions, some shell; disturbed upper boundary
II	70-127	Natural; 10 YR 6/3 (pale brown); loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, broken/discontinuous lower boundary; contained midden, fire-cracked rock; buried A-horizon (SIHP# 50-80-14-5820) with three features (Feature 18-20) and human skeletal remains
IIIa	75-130	Natural; 10 YR 8/4 (very pale brown); fine to coarse grained sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained few small shells
IIIb	125-165	Natural; 10 YR 7/4 (very pale brown); very fine to fine grained sand; structureless, single-grain; wet, non-sticky consistency; non-plastic, marine origin; diffuse, smooth lower boundary
IIIc	160-175	Natural; 2.5 Y 6/3 (light yellowish brown); medium to very coarse grained sand; structureless, single-grain; wet, slightly sticky consistency; weakly cemented; non-plastic; marine origin; lower boundary not visible; contained larger shells

T-150 Wood Taxa Identification Results for SIHP# -5820 Feature 19 (formerly Feature 2) and Feature 20 (formerly Feature 3)

Trench T-150, Halekauwila Street, just south of Cooke Street intersection							
Sample 10: Feature 2, 70-75 cmbs, Stratum II	1228-74	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Nutshell	56	1.99
	1228-75				Wood		
	1228-76				Wood		
	1228-77	Not identified			cf. Bark		
	1228-78				Wood		
	1228-79						
	1228-80	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	1	0.05
	1228-81	Monocot					
	1228-82	<i>Chenopodium oahuense</i>	<i>'Āheahea, 'āweoweo</i>	Native/Shrub	Wood	1	0.01
Sample 11: Feature 3, 90-130 cmbs, Stratum II	1228-83	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Nutshell	2	0.07
	1228-84				Stem		
	1228-85				Wood		



T-150 C14 Radiocarbon Date Results for Feature 19 (formerly Feature 2), above and Feature 20 (formerly Feature 3), below

3.48 Test Excavation 151 (T-151)

Ahupua'a:	Honolulu
LCA :	387, 1504
TMK #:	2-1-050:067
Elevation:	1.51 m
UTM:	618515 mE, / 2355673 mN
Max Length / Width / Depth:	6.7 m / 0.69 m / 1.5 m
Orientation:	326 / 146° TN
Targeted Project Component:	Utility relocation (8" Sewer)
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 151 (T-151) was in the sidewalk along the eastbound side of Halekauwila Street. T-151 was near the intersection of the Halekauwila Street and Cooke Street intersection. T-151 was east of the historic Mother Waldron Park and was within private property. Nearby utilities included at storm drain 3.2 m northeast, and an electric line 2.6 m southwest of T-151. T-151 was shifted 2.0 m to the northwest to avoid utilities. The excavation area was level with the surrounding land surface on a sidewalk raised 0.15 m above the road surface.

Summary of Background Research and Land Use: The 1883 Baldwin map shows T-151 near the northern edge of possible salt pans. According to Bishop's 1884 Honolulu and Kewalo map, T-151 was within LCA 1504, 466.0 m northeast of the shoreline. LCA 1504 was awarded to Pahika and contained one house lot, pond, salt land, and 2 *kalo lo'i*. T-151 was also within LCA 387 awarded to the ABCFM and contained salt ponds. The surrounding area was a wetland setting that supported multiple other LCAs. Wall's 1887 map of Honolulu indicated little development with major roads and areas concentrated to the north and west of T-151. Some minor structures dotted the landscape. By 1897 development of street grids was beginning and T-151 was near the southern end of Cooke Street (Monsarrat 1897 map of Honolulu RM1910). Between 1919 and 1943 the area experienced heavy urban development with new structures, streets, industrial areas, and the expansion of the shoreline (1919, 1933, and 1943 Honolulu War maps). The 1953 Army Mapping Service map of Honolulu showed T-151 within an urbanized setting. The 1927 and 1952 University of Hawaii SOEST Kaka'ako aerial photographs and the 1939-41 Army Air Corps aerial photograph series indicated T-151 was in a residential area for several years. The 1970 University of Hawaii SOEST Kaka'ako aerial showed the area becoming industrialized and more representative of the present day setting.

Several previous archaeology studies were conducted within the vicinity of T-151. Winieski and Hammatt (2000b) performed archaeological monitoring along Halekauwila Street and neighboring cross streets for the Kaka'ako Improvement District 3 project, the Pohulani housing project, and the Kauhale Kaka'ako project areas. During monitoring a total of 20 human burials were encountered. Eleven burials were found near or within Mother Waldron Park (SIHP # 50-80-14-5820). T-151 was 59.0 m east of the historic Mother Waldron Park (SIHP -01388). A pre

to post-Contact subsurface cultural deposit and nine burials were encountered within the Pohulani Elderly Rental Housing Facility (SIHP # 50-80-14-4380). Dagher and Spear (2013) documented an inadvertent human burial find 26.0 m northeast of T-151. The burial was a previously *in situ* pre-Contact burial encountered during construction activities. The burial was designated as SIHP # 50-80-14-7260.

Documentation Limitations: T-151 was excavated to a depth of 1.50 mbs and beneath the water table at 1.48 mbs. There were no factors that limited the documentation of T-151.

Stratigraphic Summary: The stratigraphy consisted of fill layers overlying natural sediment. Observed strata included asphalt (Ia), very gravelly sandy loam (Ib), extremely gravelly sand (Ic), gravelly loam (IIa), natural silty sand (IIb), fine-grained Jaucas sand (III), and medium grained Jaucas sand (IV). The stratigraphy did not conform to the USDA soil survey designation of Fill land (FL). Stratum IIa and IIb were designated a component of SIHP #50-80-14-5820.

Artifacts Discussion: Three traditional Hawaiian artifacts (Acc. # 151-A-1 to A-3) were collected. Artifacts consisted of two pieces of volcanic glass debitage from Stratum IIa, Feature 22; one volcanic glass flake from Stratum IIa; and one piece of volcanic glass debitage from Stratum IIa. One red brick fragment (Acc. # 151-A-1) was collected from Stratum IIa, Feature 23, 92cmbs. The brick was machine made between 1918 and 1978. The presence of both historic cultural material and possible traditional artifacts (volcanic glass) reflect the mixed depositional context of the former land surface (buried A-horizon), which appears to have been used and inhabited during both the pre- and early post-Contact period.

Features Discussion: A total of five features (Feature 21-25) were observed within T-151. Features 21 through 23 originated in Stratum IIa. Feature 24 originated in Stratum IIb. Feature 25 originated in Stratum IIb. Features 21-25 were designated as features of SIHP# 50-80-14-5820, a buried, culturally-enriched A-horizon.

SIHP# -5820 Feature 21 was interpreted as a pit of indeterminate function. Feature 21 originated at 0.48 mbs and terminated at 0.85 mbs. Feature 21 originated within Stratum IIa and extended into Stratum IIb. Feature 21 was oval shaped in plan view and was 0.20 m wide by 0.40 m long and extended into the southwest sidewall. Feature 21 contained fire-cracked rock and marine shell midden. A 5.5 liter bulk sediment sample from 0.48-0.76 mbs and a 7.6 liter screened sample from 0.65-0.80 mbs were collected (see Sample Results below).

SIHP# -5820 Feature 22 was interpreted as a pit of indeterminate function. Feature 22 originated at 0.60 mbs and terminated at 0.90 mbs. Feature 22 originated within Stratum IIa and extended into Stratum IIb. Feature 22 was oval shaped in plan view and was 0.30 m wide by 0.65 m long and extended into the southwest sidewall. Feature 22 contained marine shell midden, historic, and faunal remains. A 5.5 liter bulk sediment sample from 0.53-0.75 mbs and a 15.2 liter screened sample from 0.68-0.72mbs were collected (see Sample Results below).

SIHP# -5820 Feature 23 was interpreted as possible post mold. Feature 23 originated at 0.60 mbs and terminated at 0.99 mbs. Feature 23 originated within Stratum IIa and extended into Stratum III. Feature 23 was oval shaped in plan view and was 0.49 m wide by 0.42 m long and extended into the southwest sidewall. Feature 23 contained marine shell midden, historic, faunal remains, and fire-cracked rock. A 5.5 liter bulk sediment sample from 0.70-0.90 mbs and a 11.4 L: screened sample from 0.68-0.75 mbs were collected (see Sample Results below).

SIHP# -5820 Feature 24 was interpreted as a pit containing *in situ* the skeletal remains of two infant dogs (*Canis lupus familiaris*). Feature 24 originated at 0.65 mbs and terminated at 0.83 mbs. Feature 24 originated within Stratum IIb. Feature 24 was oval shaped, being 0.30 m wide and extended into the side wall.

SIHP# -5820 Feature 25 was interpreted as a pit of indeterminate function. Feature 25 originated at 0.90 mbs and terminated at 1.19 mbs. Feature 25 originated within Stratum IIb and extended into Stratum III. Feature 25 but was not visible in plan view and was only observed in the southwest profile wall. Feature 25 contained minimal amounts of marine midden, charcoal, and faunal remains. A 5.5 liter bulk sediment sample was collected from 0.86-1.07 mbs (see Sample Results below).

Terrestrial Faunal Remains Collected During Excavation: Faunal remains were collected individually during excavation from SIHP# -5820 Feature 24 of Stratum IIb between 0.7 and 0.78 mbs, 0.7 and 0.83 mbs, and at 0.98 mbs respectively. The remains from between 0.7 and 0.78 mbs consisted of articulated *Canis lupus familiaris* (infant) remains with incompletely formed permanent dentition. The remains from between 0.7 and 0.83 mbs consisted of articulated *Canis lupus familiaris* (infant) remains with deciduous dentition. The remains from 0.98 mbs (the base of Feature 24) consisted of juvenile *Sus scrofa* fragments. None of the remains showed any evidence of cultural modification.

Sample Results: A total of six bulk sediment samples and five screened samples were collected from within T-151. All of the samples were wet-screened.

A 5.5-liter bulk sediment sample from 0.48-0.76 mbs and a 7.6-liter screened sample from 0.65-0.80 mbs were collected within Feature 21 of Stratum IIa. The content of the two samples were combined. The samples contained charcoal (4.6 g), Carditidae *Cardita thaanumi* (1.6 g), micro shells and gastropods (1.6 g), Melampidae *Melampus castaneus* (0.3 g), Fascioliariidae (0.2 g), Columbelloidae (0.1 g), Naticidae (0.1 g), fish remains (1.6 g), fire-cracked rock (253.9 g), burned bivalve fragments (4.9 g), Mytilidae *Brachidontes crebristriatus* (5.7 g), Echinodermata *mathaei* sp. (1.8 g), Neritidae *Nerita picea* (1.8 g), crustacean (0.4 g), and Tellinidae *Tellina palatam* (0.1 g).

A 5.5-liter bulk sediment sample from 0.53-0.75 mbs and a 15.2-liter screened sample from 0.68-0.72mbs were collected within Feature 22 of Stratum IIa. The content of the two samples were combined. The samples contained charcoal (0.2 g), Neritidae *Nerita picea/Theodoxus neglectus* (7.2 g), Neritidae *Nerita picea* (49.4 g), Strombidae *Strombus* sp. (9.1 g), unidentified burned shell (0.6 g), crustacean (0.5 g), Echinodermata *mathaei* sp./*diadema* sp. (0.3 g), Mytilidae *Brachidontes crebristriatus* (0.3 g), Tellinidae *Tellina* sp. (0.1 g), Turbinidae *Turbo* sp. (0.7 g), three pieces of volcanic glass (0.8 g), metal fragments (0.5 g), unidentified medium mammal bone (0.3 g), and cement fragments (4.2 g).

A 5.5-liter bulk sediment sample from 0.70-0.90 mbs and a 11.4-liter screened sample from 0.68-0.75 mbs were collected within Feature 23 of Stratum IIa. The content of the two samples were combined. The samples contained Neritidae *Nerita picea* (8.0 g), unidentified burned shell (2.3 g), Cymatiidae *Cymatium* sp. (0.7 g), Tellinidae *Tellina palatam* (1.4 g), Mytilidae *Brachidontes crebristriatus* (0.4 g), Echinodermata *diadema* sp./*mathaei* sp. (0.3 g), crustacean (0.6 g), possible coal fragments (33.0 g), glass fragments (0.1 g), unidentified fish bone (0.3 g),

unidentified medium mammal bone (0.1 g), fire-cracked basalt rock (344.8 g), and vesicular basalt fragments (15.4 g).

A 5.5 liter bulk sediment sample was collected from Stratum IIb (Feature 25) at 0.86-1.07 mbs. The sample was wet-screened and contained charcoal (0.5 g), rat (*Rattus sp.*) bone (0.1 g), burned crustacean (0.8 g) and Echinodermata (0.1 g).

A 5.5 liter bulk sediment sample was collected from Stratum III at 0.80-0.97 mbs. The sample contained charcoal (2.0 g), a burned *kukui* nut fragment (0.1 g), one piece of volcanic glass (0.1 g), a rat (*Rattus rattus*) bone (0.1 g), an unidentified fish bone (0.2 g), fire-cracked basalt rock (10.7 g), Neritidae *Theodoxus neglectus/Nerita picea* (2.1 g), Mytilidae *Brachidontes crebristriatus* (1.7 g), burned shell (1.4 g), crustacean (0.8 g), Naticidae *Natica sp.* (0.4 g), Echinodermata *mathaei sp.* (0.1 g), and Tellinidae *Tellina palatam* (0.1 g).

A 5.5 liter bulk sediment sample was collected from Stratum III at 0.81-1.27 mbs. The sample contained Hipponicidae *Hipponix sp.* (1.0 g), micro gastropods (0.3 g), and Naticidae (0.1 g), Mytilidae *Brachidontes crebristriatus* (0.4 g), Tellinidae *Tellina palatam* (0.4 g), Trochidae (0.3 g), crustacean (0.2 g), and Echinodermata *diadema sp.* (0.2 g).

Two screened samples, totaling 20.9 liters, were collected from Stratum IIa at 0.66 mbs. The content of the samples was combined. The samples contained charcoal (3.9 g), burned glass fragment (2.8 g), volcanic glass (0.9 g), fish remains (0.4 g), Neritidae *Nerita picea* (9.5 g), gastropods (1.6 g), Isognomidae *Isognomon sp.* (0.9 g), Mytilidae *Brachidontes crebristriatus* (1.3 g), Echinodermata *diadema sp.* (0.3 g), Strombidae *Strombus sp.* (0.4 g), Tellinidae *Tellina spp.* (0.4 g), and burned crustacean (0.1 g).

Charcoal samples from Feature 25 of Stratum IIb were submitted for wood taxa identification. Wood taxa identification results indicated the presence of Polynesian introduced and historically introduced species. Feature 25 contained *kukui* (*Aleurites moluccana*) and *ko'oko'olau* (cf. *Bidens sp.*). The *ko'oko'olau* charcoal from Feature 25 was subsequently submitted for C14 radiocarbon dating. Radiocarbon analysis yielded a calibrated 2-sigma date of AD 1480 to AD 1660 (95.4%).

Volcanic glass samples from Stratum IIb at 0.80-0.97 mbs and Stratum IIa at 0.66 mbs were sent for EDXRF analysis. Specific source information is not available; however the volcanic glass sample clearly does not match sources from Hawaii County. The Stratum IIa sample contained both shell and metal slag material. Both volcanic glass samples from Stratum IIb were from "Group 1", one of two distinct geochemical groups identified from the 35 City Center AIS EDXRF volcanic glass samples, likely representing different volcanic sources on O'ahu (see EDXRF discussion in Volume V).

The results of sample analysis documented possible traditional food refuse (marine shell midden, burned shell, fish bone) throughout Stratum IIa, Stratum IIb, and associated features. The presence of cement and metal fragments within SIHP# -5820 Feature 22, the presence of possible coal and glass fragments within SIHP# -5820 Feature 23, and the presence of rat bones within SIHP# -5820 Feature 25 indicates post-Contact deposition or disturbance of the features associated within the buried A-horizon. Radiocarbon analysis of charcoal collected from SIHP# -5820 Feature 25, however, suggests the feature contents were likely deposited during the pre-Contact period as evidenced by a radiocarbon age of AD 1480 to AD 1660 (95.4%). The

presence of historic cultural material, traditional food refuse, possible traditional artifacts (volcanic glass), and charcoal dating to the pre-Contact period appears to reflect the mixed depositional context of the former land surface (buried A-horizon), which appears to have been used and inhabited during both the pre- and early post-Contact period.

GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-151 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs and again at approximately 0.6 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.1 mbs.

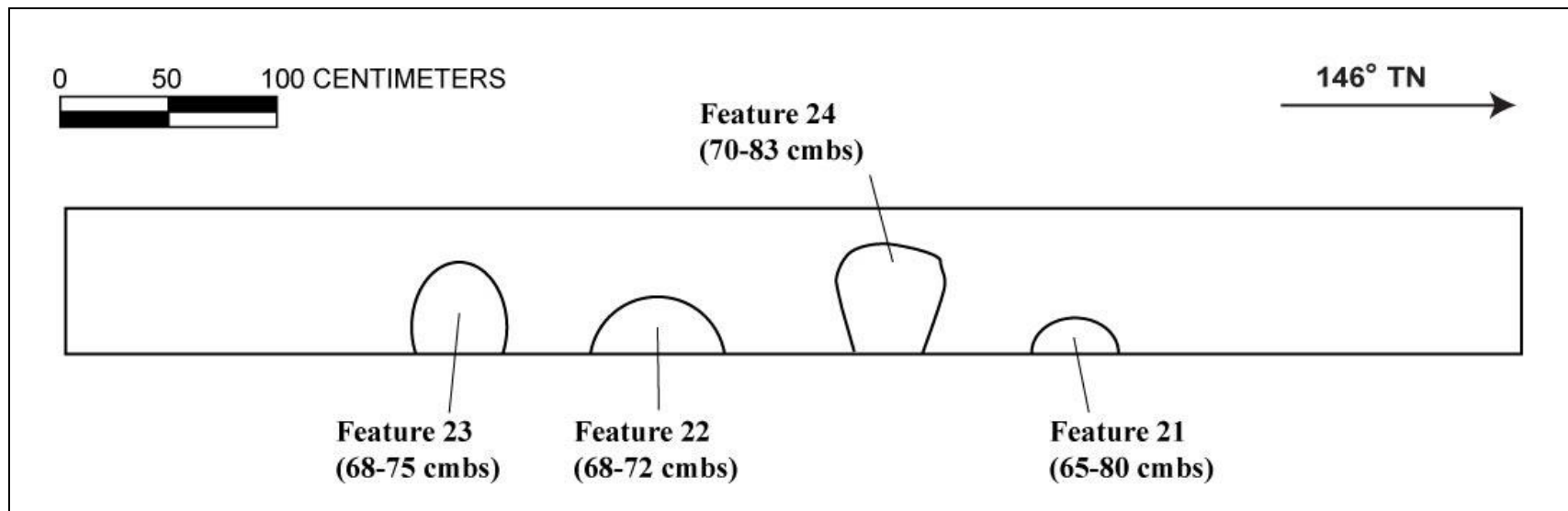
Summary: T-151 was excavated to a depth of 1.50 mbs and beneath the water table at 1.48 mbs. The stratigraphy consisted of fill (Ia-Ic) overlying natural sediment (IIa-IV). The stratigraphy did not conform to the USDA soil survey designation of Fill land (FL). Three traditional Hawaiian artifacts (Acc. # 151-A-1 to A-3) were collected. Artifacts consisted of two pieces of volcanic glass debitage from Stratum IIa, Feature 22; one volcanic glass flake from Stratum IIa; and one piece of volcanic glass debitage from Stratum IIa. One red brick fragment (Acc. # 151-A-1) was collected from Stratum IIa, Feature 23, 92cmbs. The brick was machine made between 1918 and 1978. A total of five features (Feature 21-25) were observed within T-151. Features 21 through 23 originated in Stratum IIa. Feature 24 originated in Stratum IIb. Feature 25 originated in Stratum IIb. Feature 21, 22, and 25 were considered to be pit features of indeterminate function. Feature 23 was considered to be a possible post mold. Feature 24 contained the *in situ* skeletal remains of two infant dogs. Faunal remains were collected individually during excavation from SIHP# -5820 Feature 24 of Stratum IIb. None of the remains showed any evidence of cultural modification. A total of six bulk sediment samples and five screened samples were collected from within T-151. The results of sample analysis documented possible traditional food refuse (marine shell midden, burned shell, fish bone) throughout Stratum IIa, Stratum IIb, and associated features. The presence of cement and metal fragments within SIHP# -5820 Feature 22, the presence of possible coal and glass fragments within SIHP# -5820 Feature 23, and the presence of rat bones within SIHP# -5820 Feature 25 indicates post-Contact deposition or disturbance of the features associated within the buried A-horizon. Radiocarbon analysis of charcoal collected from SIHP# -5820 Feature 25, however, suggests the feature contents were likely deposited during the pre-Contact period as evidenced by a radiocarbon age of AD 1480 to AD 1660 (95.4%). The presence of historic cultural material, traditional food refuse, possible traditional artifacts (volcanic glass), and charcoal dating to the pre-Contact period appears to reflect the mixed depositional context of the former land surface (buried A-horizon), which appears to have been used and inhabited during both the pre- and early post-Contact period. Features 21-25 were designated as features of SIHP# 50-80-14-5820, a buried, culturally-enriched A-horizon that is described in Volume I.



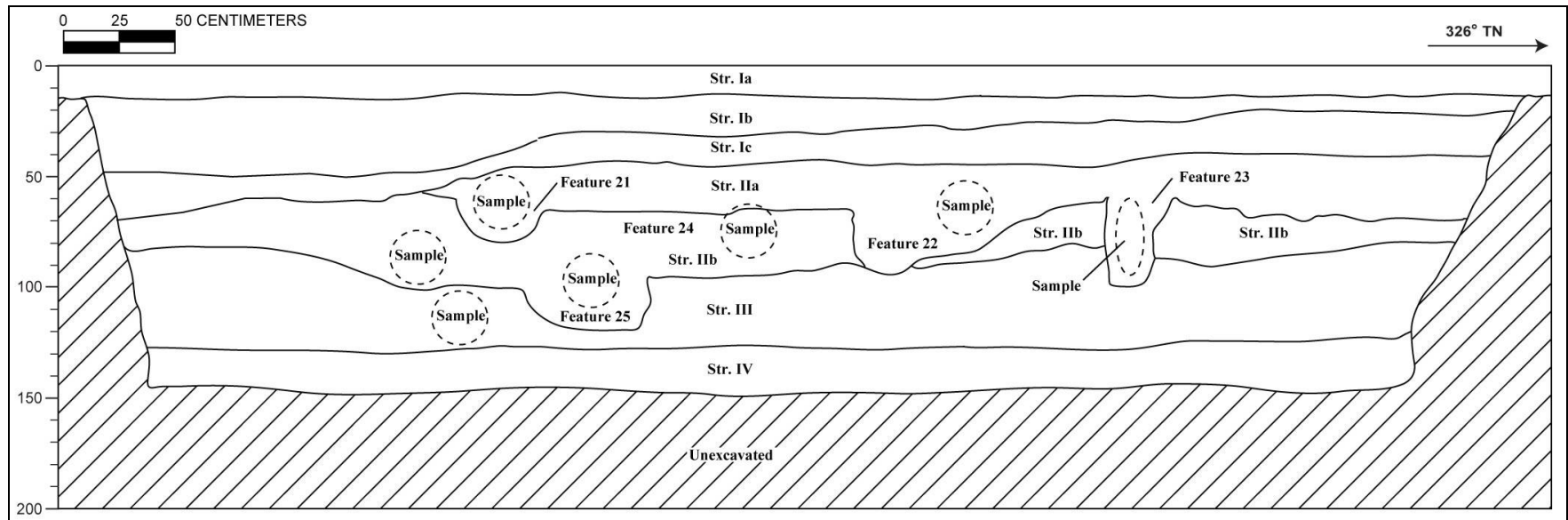
T-151 general location (view to northwest).



T-151 southwest profile wall (view to northwest).



T-151 plan view showing the locations of SIHP# -5820 Features 21-24 at the lower boundary of Stratum IIa



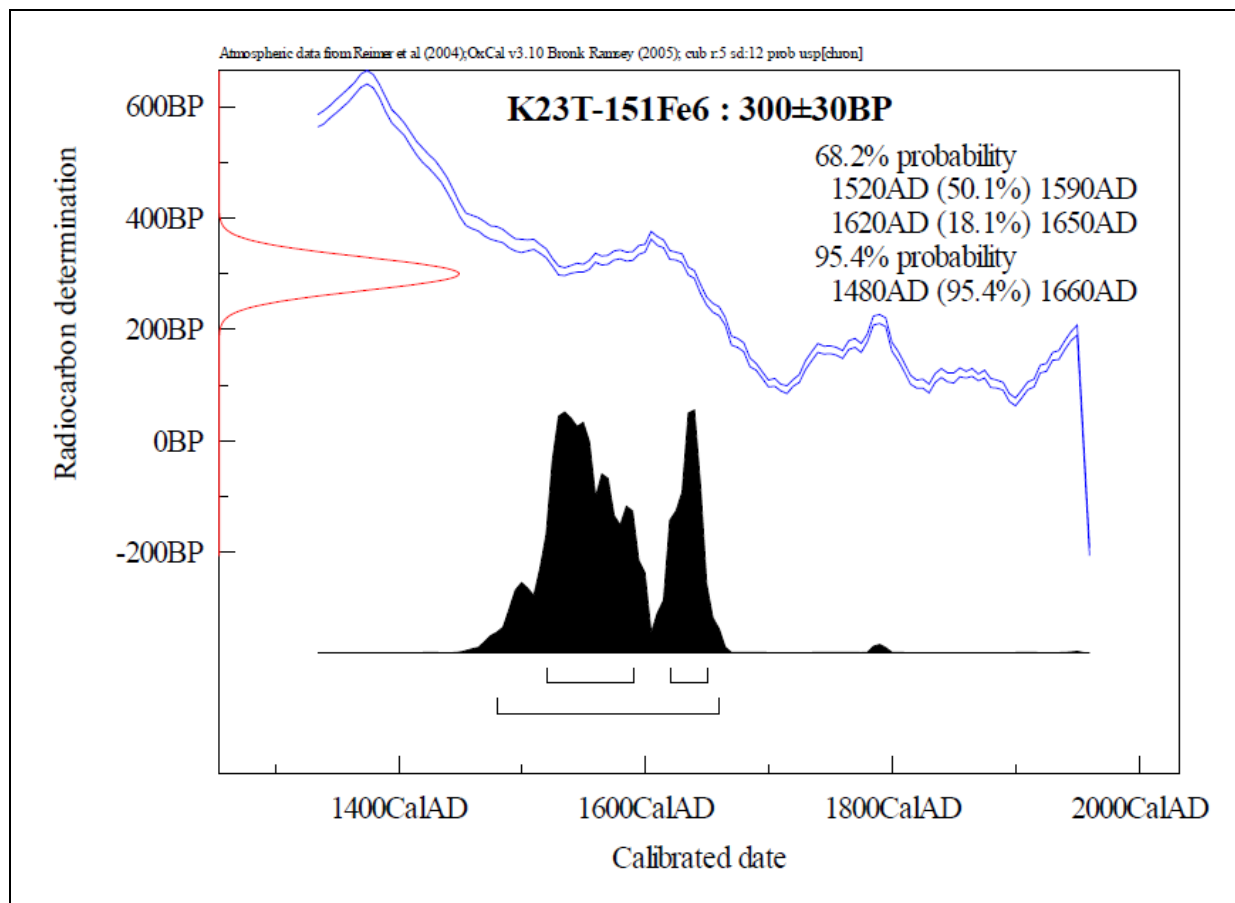
T-151 southwest wall profile.

T-151 Stratigraphic Description for southwest wall Profile.

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	14-48	Fill; 2.5 Y 5/2 (grayish brown); very gravelly sandy loam; structureless, single-grain; moist, very friable consistency; non plastic; terrigenous origin; clear, smooth lower boundary; contained some wire—possibly from construction; gravel base course fill
Ic	20-55	Fill; 2.5 Y 8/2-7/2 (pale yellow to light gray); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; crushed coral base course/grading fill
Ila	40-98	Natural; 7.5 YR 2.5/1 (black); gravelly loam; weak, fine, crumb structure; dry, weakly coherent consistency; non-plastic; terrigenous origin; contained <i>pipipi</i> shells, fish remains, burnt metal fragments, 1 red brick fragment; previously disturbed upper portion of A-horizon.
Ilb	52-118	Natural, 2.5 Y 4/2 (dark grayish brown); fine grained silty sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; diffuse, irregular lower boundary; contained Feature 25, shells, charcoal, fish remains; former undisturbed A-horizon (SIHP -5820)
III	81-127	Natural; 10 YR 6/4 (light yellowish brown); fine grained sand; structureless, single-grain; moist, very friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; natural sand
IV	125-150	Natural; 10 YR 7/3 (very pale brown) with clay mottles of 10YR 7/3 very pale brown; medium-grain sand, structureless, single-grain; very friable consistency; non-plastic; marine origin; natural sand

T-151 Wood Taxa Identification Results for SIHP# -5820 Feature 25

Trench T-151, Halekauwila Street, just south of Keawe Street intersection							
Sample 12: Feature 6, 86-108 cmbs, Stratum IIa	1228-86	cf. <i>Bidens</i> sp.	<i>Ko'oko'olau</i>	Native + Historic Introductions/Shrub	Wood	6	0.06
	1228-87				Wood		
	1228-88	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Nutshell	2	<0.01
	1228-89						



T-151 C14 Radiocarbon Results for SIHP# -5820 Feature 25

3.49 Test Excavation 151A (T-151A)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-050:067
Elevation:	1.5 m
UTM:	618529.7528 mE, / 2355651.936 mN
Max Length / Width / Depth:	6.11 m / 0.74 m / 1.55 mbs
Orientation:	154 / 344° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 151 (T-151) was in the sidewalk along the eastbound side of Halekauwila Street. T-151 was near the intersection of the Halekauwila Street and Cooke Street intersection. T-151 was 73.0 m southeast of the historic Mother Waldron Park and was within private property owned by the Hawaii Community Development Authority. T-151A was an additional excavation added to further investigate features associated with a subsurface cultural deposit (SIHP #50-80-14-5820). T-151A also investigated a utility relocation. Nearby utilities included at storm drain 2.8 m east of T-151A. The excavation surface was level with the surrounding land surface but slightly elevated from the roadway.

Summary of Background Research and Land Use: The 1883 Baldwin map shows T-151 near the northern edge of possible salt pans. According to Bishop's 1884 Honolulu and Kewalo map, within LCA 387 awarded to the ABCFM and contained salt ponds. The surrounding area was a wetland setting that supported multiple other LCAs. Wall's 1887 map of Honolulu indicated little development with major roads and areas concentrated to the north and west of T-151. Some minor structures dotted the landscape. By 1897 development of street grids was beginning and T-151 was near the southern end of Cooke Street (Monsarrat 1897 map of Honolulu RM1910). Between 1919 and 1943 the area experienced heavy urban development with new structures, streets, industrial areas, and the expansion of the shoreline (1919, 1933, and 1943 Honolulu War maps). The 1953 Army Mapping Service map of Honolulu showed T-151 within an urbanized setting. The 1927 and 1952 University of Hawaii SOEST Kaka'ako aerial photographs and the 1939-41 Army Air Corps aerial photograph series indicated T-151 was in a residential area for several years. The 1970 University of Hawaii SOEST Kaka'ako aerial showed the area becoming industrialized and more representative of the present day setting.

Several previous archaeology studies were conducted within the vicinity of T-151. Winieski and Hammatt (2000b) performed archaeological monitoring along Halekauwila Street and neighboring cross streets for the Kaka'ako Improvement District 3 project, the Pohulani housing project, and the Kauhale Kaka'ako project areas. During monitoring a total of 20 human burials were encountered. Eleven burials were found near or within Mother Waldron Park (SIHP # 50-80-14-5820). T-151 was 59.0 m east of the historic Mother Waldron Park (SIHP -01388). A pre to post-Contact subsurface cultural deposit and nine burials were encountered within the

Pohulani Elderly Rental Housing Facility (SIHP # 50-80-14-4380). Dagher and Spear (2013) documented an inadvertent human burial find 26 m northeast of T-151. The burial was a previously *in situ* pre-Contact burial encountered during construction activities. The burial was designated as SIHP # 50-80-14-7260.

Documentation Limitations: T-151A was excavated to a depth of 1.55 mbs and beneath the water table at 1.51 mbs. There were no factors that limited the documentation of T-151A.

Stratigraphic Summary: The stratigraphy consisted of fill overlying natural sediment. Observed strata included concrete (Ia), very gravelly sandy loam (Ib), very gravelly sand fill (Ic), gravelly silty sandy loam fill (Id), silty sandy loam fill (Ie), silty loamy sand (II), and a silty sandy loam (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: See sample results below.

Features Discussion: A total of four features (Feature 26-29) were observed within T-151A. All features (Features 26-29) originated within Stratum Id, which was interpreted as a fill layer related the disturbance of the buried A-horizon (SIHP# 50-80-14-5820) during the post-Contact period. Features 26-29 are designated as features of SIHP# 50-80-14-5820, a buried, culturally-enriched A-horizon.

SIHP# -5820 Feature 26 was interpreted as a pit of indeterminate function. Feature 26 originated at 0.74 mbs and terminated at 0.80 mbs. Feature 26 originated within Stratum Id and extended into Stratum Ie. Feature 26 was irregular shaped in plan view and extended into the southwest sidewall. Feature 26 contained basalt flakes, volcanic glass, faunal remains, and marine shell midden. A 2.0 liter bulk sediment sample and a 9.5 liter screened sample from 0.57-0.78 mbs 0.65-0.80 mbs were collected (see Sample Results below).

SIHP# -5820 Feature 27 was interpreted as a pit of indeterminate function. Feature 27 originated at 0.70 mbs and terminated at 0.72 mbs. Feature 27 originated within Stratum Id and extended into Stratum Ie. Feature 27 was irregular shaped in plan view and extended into the southwest sidewall. Feature 27 contained marine shell midden, historic, charcoal, and faunal remains. A 1.0 liter bulk sediment sample and a 3.8 liter screened sample from 0.70-0.72 mbs were collected (see Sample Results below).

SIHP# -5820 Feature 28 was interpreted as a pit of indeterminate function. Feature 28 originated at 0.70 mbs and terminated at 0.75 mbs. Feature 28 originated within Stratum Id and extended into Stratum Ie. Feature 28 was linear shaped in plan view and extended into the southwest and northeast sidewalls. Feature 28 contained charcoal, marine shell midden, historic, faunal remains, and possibly fire-cracked rock. A 2.0 liter bulk sediment sample and a 3.8 L: screened sample from 0.53-0.79 mbs were collected (see Sample Results below).

SIHP# -5820 Feature 29 was interpreted as a pit of indeterminate function. Feature 29 originated at 0.47 mbs and terminated at 0.58 mbs. Feature 29 originated within Stratum Id and extended into Stratum Ie. Feature 29 was not visible in plan view and only observed in the southwest wall. Feature 29 contained little cultural material. A 1.0 liter bulk sediment sample was collected from 0.48-0.58 mbs (see Sample Results below).

All features identified (Features 26-29) contained traditional Hawaiian cultural material and historic material, indicating Stratum Id was the result of historic period disturbance to and reposition of the buried A-horizon (SIHP# -5820).

Terrestrial Faunal Remains Collected During Excavation: Medium mammal (possible *Sus Scrofa*) fragments were collected individually from the backdirt pile. The fragments had been butchered with a metal blade, indicating an historic origin, not traditional Hawaiian. Though these remains were collected from the backdirt pile (and are therefore without context) the approximated depth (0.7 mbs) would place them in association with the features found in the culturally enriched A-horizon of SIHP# 50-80-14-5820.

Sample Results: A total of six bulk sediment samples and five screened samples were collected within T-151A from Stratum Id, Ie, II, and III. All of the samples were wet-screened.

A 2.0 liter bulk sediment sample and a 9.5 liter screened sample from 0.57-0.78 mbs 0.65-0.80 mbs were collected from Stratum Id (Feature 26). The samples were wet-screened. The samples contained charcoal (0.7 g), naturally-deposited Hipponicidae *Hipponix* spp. (0.5 g), Melampidae *Melampus castaneus* (0.3 g), Melampidae *Melampus* sp. (0.3 g), volcanic glass (0.1 g), fish remains (0.1 g), basalt (0.6 g), Neritidae *Nerita picea* (6.8 g), Strombidae *Strombus* sp. (4.6 g), Melampidae *Melampus* sp. (0.3 g), Echinodermata *diadema* sp./*mathaei* sp. (0.1 g), Mytilidae *Brachidontes crebristriatus* (0.4 g), crustacean (0.7 g), and burned shell (0.2 g).

A 1.0 liter bulk sediment sample and a 3.8 liter screened sample from 0.70-0.72 mbs were collected from Stratum Id (Feature 27). The samples were wet-screened. The samples contained charcoal (0.1 g), naturally-deposited Hipponicidae *Hipponix* spp. (0.4 g), Naticidae (0.1 g), Neritidae *Nerita picea* (1.0 g), crustacean (0.4 g), Mytilidae *Brachidontes crebristriatus* (0.2 g), Echinodermata *mathaei* sp. (0.1 g), white and pink glass fragments (4.8 g), fish remains (0.1 g), and midden (1.7 g). Midden material included Neritidae *Nerita picea* (1.0 g), crustacean (0.4 g), Mytilidae *Brachidontes crebristriatus* (0.2 g), and Echinodermata *mathaei* sp. (0.1 g).

A 2.0 liter bulk sediment sample and a 3.8 L: screened sample from 0.53-0.79 mbs were collected from Stratum Id (Feature 28). The samples were wet-screened. The samples contained charcoal (16.5 g), naturally-deposited Melampidae *Melampus* sp. (0.3 g), Hipponicidae *Hipponix* sp. (0.3 g), Melampidae *Melampus castaneus* (0.1 g), Tellinidae (0.1 g), ceramics (1.5 g), glass (0.6 g), medium mammal remains (14.9 g), possible fire-affected rock (9.7 g), and midden (5.1 g). Midden material included Neritidae *Nerita picea* (4.6 g), crustacean (0.1 g), echinodermata (0.1 g), and Mytilidae *Brachidontes crebristriatus* (0.3 g).

A 1.0 liter bulk sediment sample was collected from Stratum Id at 0.48-0.58 mbs (Feature 29). The sample was wet-screened and contained naturally-deposited limpets and gastropods (0.4 g), crustacean (0.2 g), Echinodermata *mathaei* sp. (0.1 g), and fish remains (0.1 g).

A 4.0 liter bulk sediment sample and a 3.8 liter screened sample were collected from Stratum II at 0.98-1.07 mbs. The samples were wet-screened. The samples contained naturally-deposited micro gastropods (1.6 g), Melampidae *Melampus* sp. (0.5 g), Echinodermata (0.3 g), small mammal remains (0.1 g), and midden (2.1 g). Midden material included Tellinidae *Tellina palatum* (1.0 g), burned crustacean (0.6 g), Mytilidae *Brachidontes crebristriatus* (0.3 g), and Echinodermata *mathaei* sp. (0.2 g).

Sample analysis of Stratum Id indicates the presence of food refuse and historic material in this layer contains elements of the former land surface that were disturbed or re-worked during the post-Contact era. The results of sample analysis indicated that Stratum II (the former land surface) within T-151 was likely utilized during pre-Contact to post-Contact times. The small amounts of midden may support minimal traditional use of the former land surface during the pre- and/or early post-Contact period.

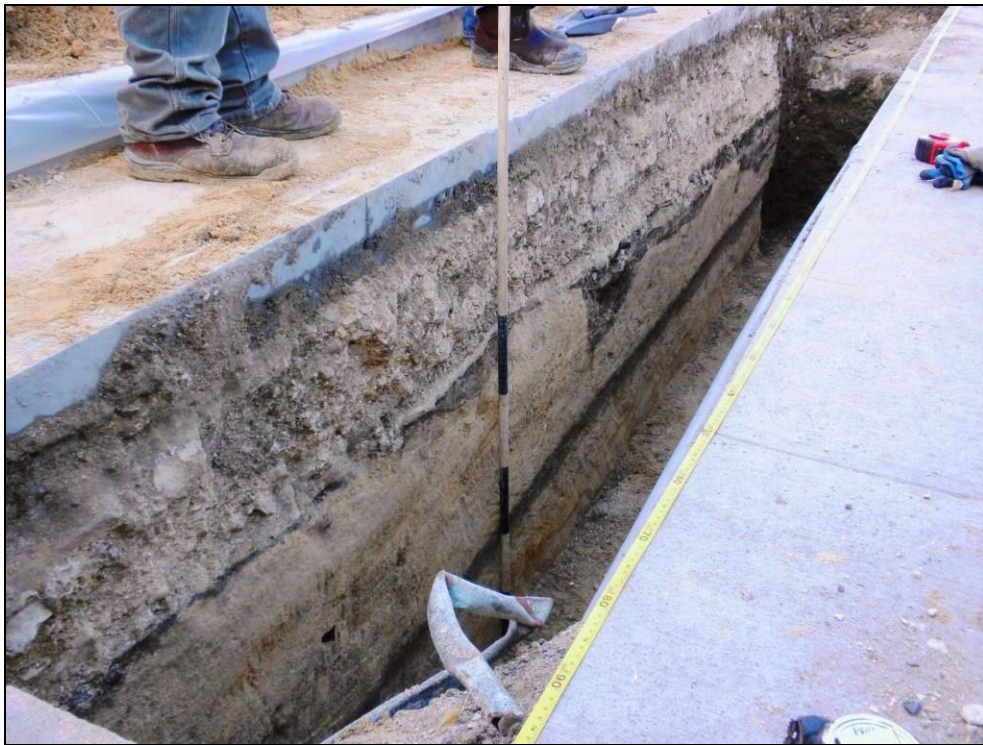
GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-151 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs and again at approximately 0.6 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.1 mbs.

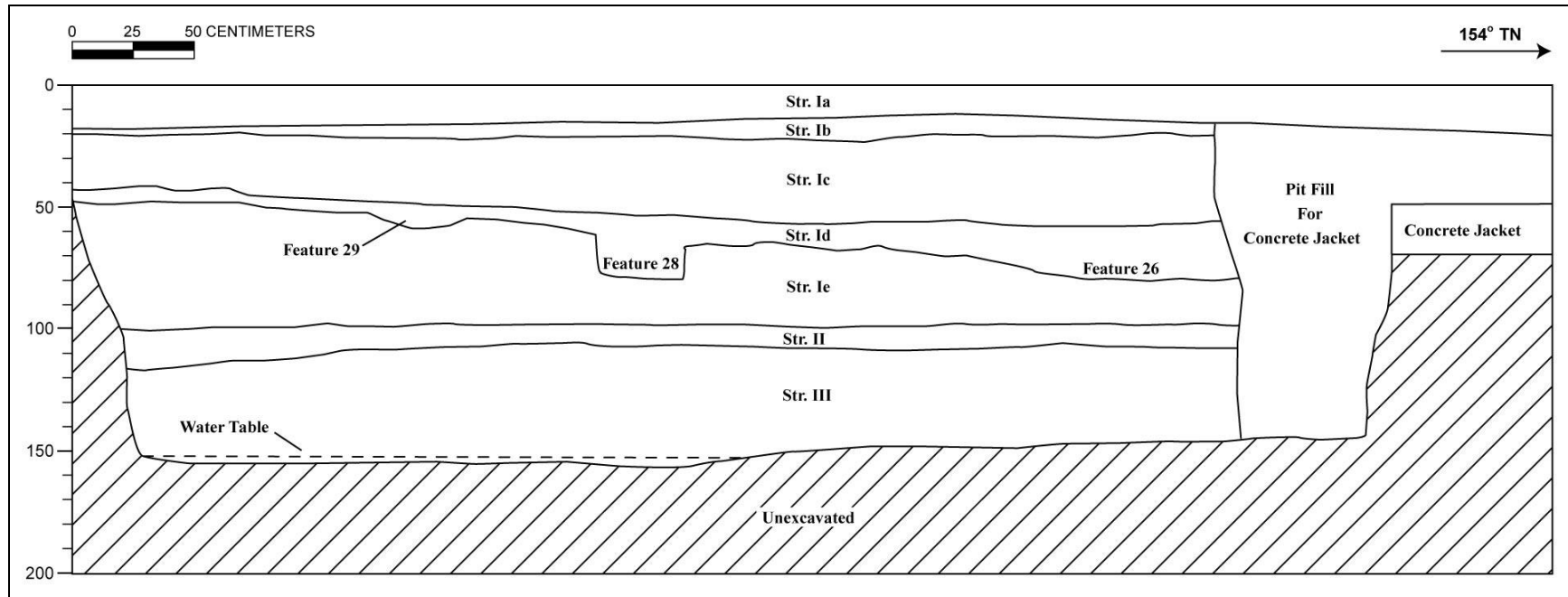
Summary: T-151A was excavated to a depth of 1.55 mbs and beneath the water table at 1.51 mbs. The stratigraphy consisted of fill (Ia-Ie) overlying natural sediment (II-III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). A total of four features (Feature 26-29) were observed within T-151A. All features (Features 26-29) originated within Stratum Id, which was interpreted as a fill layer related the disturbance of the buried A-horizon (SIHP# 50-80-14-5820) during the post-Contact period. Features 26-29 were interpreted as pit features of indeterminate function. Medium mammal (possible *Sus Scrofa*) fragments were collected individually from the backdirt pile. A total of six bulk sediment samples and five screened samples were collected within T-151A from Stratum Id, Ie, II, and III. Sample analysis of Stratum Id indicates the presence of food refuse and historic material in this layer contains elements of the former land surface that were disturbed or re-worked during the post-Contact era. Features 26-29 are designated as features of SIHP# 50-80-14-5820, a buried, culturally-enriched A-horizon that is described in Volume I.



T-151A general location (view to north).



T-151A northeast profile wall (view to east).



T-151A northeast wall profile.

T-151A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-19	Asphalt
Ib	12-22	Fill; GLEY 1 5/10Y (greenish gray); very gravelly sandy loam; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; gravel base course
Ic	19-57	Fill; 2.5 Y 8/3 (pale yellow), very gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained PVC utility at 0.46 mbs on the northeast sidewall
Id	40-80	Fill; 10 YR 3/2 (very dark grayish brown); gravelly silty sandy loam; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; abrupt, irregular lower boundary; contained historic, shell material, faunal remains, and four features; re-worked A-horizon material (Stratum II) re-deposited as fill
Ie	49-100	Fill; 10 YR 6/3 (pale brown); silty sandy loam; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary
II	98-115	Natural, 10 YR 3/2 (very dark grayish brown); silty loamy sand; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; contained shell material; faunal remains; buried A-horizon; a component of SIHP# -5820
III	105-155	Natural; 10 YR 6/3 (pale brown); silty sandy loam; structureless, single-grain; moist, friable consistency; non-plastic; marine origin; lower boundary not visible

3.50 Test Excavation 152 (T-152)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-1-050:060
Elevation:	1.48 m
UTM:	618551 mE, 2355623 mN
Max Length / Width / Depth:	6.04 m / 0.8 m / 1.26 m
Orientation:	147 / 327° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 152 (T-152) was excavated on private property owned by Hawaii Community Development Authority located on the corner of Halekauwila and Koula Street. T-152 was shifted 0.4 m *mauka* of the original location into the roadway to avoid disturbance to the concrete road curbing. Utilities within the vicinity included a sewer line approximately 3.0 m *mauka* of T-152. The excavation surface was fairly level with the surrounding land surface as it was situated on Halekauwila Street.

Summary of Background Research and Land Use: In relation to the 1884 Bishop Honolulu Kewalo map, T-152 was located approximately 426.0 m of the former shoreline. The excavation area was situated in LCA 387 (salt ponds: awarded to A.B.C.F.M), approximately 21.0 m south of LCA 1504 [1 house lot (house, pond, and salt land), 2 taro patches (*lo'i*): awarded to Pahika] and approximately 22.0 m east of T-152 was LCA 1503:1 (1 house lot and fishpond, 2 fishponds: awarded to Puaa). The surrounding area was composed of a wetland environment. The 1887 Wall map indicated that the shoreline had expanded. Developments such as small buildings and roads were present around the general area. The area had changed in 1897 as the Monsarrat Honolulu map indicated that T-152 was located within "R.S. Cooke Fertilizer Works." By 1919 the War of Honolulu map showed T-152 within a developed portion of Kaka'ako surrounded by streets and structures. Heavy development continued through 1953 as the Army Mapping Service map indicated modern day Kaka'ako and T-152 in close proximity to Mother Waldron Park and Pohukaina School.

Previous archaeology within the area included eight human burials (SIHP # -4380) recorded near Coral and Queen Street (Douglas, 1991a & b). In 2000, Winieski and Hammatt performed archaeological monitoring at the Kaka'ako Improvement District 3 area in which a total of twenty human burials were encountered; nine burials (SIHP # -4380) were discovered at the Pohulani Elderly Rental Housing and eleven burials (SIHP # -5820) in and around Mother Waldron Park (Winieski & Hammatt, 2000a).

Documentation Limitations: T-152 was excavated to a depth of 1.26 mbs and beneath the water table at 1.22 mbs.

Stratigraphic Summary: T-152 consisted of fill overlying natural sediment. Observed strata included asphalt (Ia), very gravelly loam fill (Ib), extremely gravelly sand fill (Ic), silty clay loam fill (Id), gravelly sandy loam fill (Ie), loamy sand fill (If), loamy sand fill (Ig), and natural sandy clay loam (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: Four historic artifacts (Acc. # 152-A-1 and A-4) were collected from T-152. One medicine bottle, made from 1884-1901, was collected from Stratum Ic/Id. One small white porcelain fragment, one glass bottle fragment dating from the 1820s to 1913, and one small window glass fragment were collected from Stratum Ig. Artifacts collected from Strata Ic/Id and Ig indicated a late nineteenth to early twentieth century date for the fill event.

Features Discussion: No features observed.

Terrestrial Faunal Remains Collected During Excavation: A single *Sus scrofa* sacral vertebra and a *Canis lupus familiaris* mandible fragment were collected individually during excavation from Stratum Ig (0.52-1.1 mbs). Neither bone showed evidence of cultural modification.

Sample Results: Two bulk sediment samples were collected from Stratum Ig within T-152 between 0.52-1.10 mbs (4.0 L) and between 0.61-0.76 mbs (14.0 L). The samples were collected from the excavation floor and are not depicted on the stratigraphic profile. Both of the samples were wet-screened.

The sample of Stratum Ig (4.0 L) between 0.52-1.10 mbs contained charcoal (3.4 g), unidentified burned medium mammal bone (0.3 g), unidentified fish bone (0.2 g), gastropod shell fragments (7.9 g), Melampidae *Melampus castaneus* (1.3 g), Melampidae *Melampus* sp. (0.1 g), Hipponicidae *Hipponix* spp. (0.4 g), Naticidae *Natica* sp. (0.3 g), Carditidae *Fragum mundum* (0.1 g), Carditidae *Cardita thaani* (0.1 g), Lucinidae *Ctena bella* (0.1 g), *Turbo sandwicensis* (13.8 g), Conidae *Conus* sp. (8.9 g), Neritidae *Nerita picea* (12.2 g), crustacean (2.1 g), and Echinodermate (1.4 g).

The sample of Stratum Ig (14.0 L) between 0.61-0.76 mbs contained charcoal (0.1 g), ceramic fragments (0.9 g), metal fragments (0.7 g), unidentified fish bone (0.2 g), unidentified medium mammal bone (8.1 g), fire-cracked basalt stone (81.7 g), Melampidae *Melampus castaneus* (0.1 g), Melampidae *Melampus* sp. (2.6 g), Fascioliidae (0.9 g), Hipponicidae *Hipponix* spp. (0.2 g), gastropods (0.2 g), Carditidae *Fragum mundum* (0.1 g), Naticidae *Natica* sp. (0.1 g), Pyramidellidae (2.8 g), limpets (0.1 g), Neritidae *Nerita picea* (11.4 g), Neritidae (13.3 g), Strombidae *Strombus* sp. (10.7 g), Strombidae *Strombus maculatus* (4.6 g), Naticidae *Natica* sp. (2.3 g), Turbinidae *Turbo* sp. operculum (0.3 g), Turbinidae *Turbo sandwicensis* (17.3 g), Tellinidae *Tellina palatam* (9.7 g), unidentified burned shell (1.0 g), crustacean (0.8 g), Echinodermata *mathaei* sp. (0.1 g), Isognomidae *Isognomon* sp. (0.1 g), Lucinidae *Ctena bella* (0.1 g), Mytilidae *Brachidontes crebristriatus* (0.1 g), and Cypraeidae *Cypraea caputserpentis* (6.8 g).

The results of sample analysis documented a relative abundance of various marine shell species, some of which, along with the presence of fish bone and mammal bone, may be considered traditional food refuse (midden).

GPR Discussion: A review of amplitude slice maps indicated a linear feature but was not encountered during excavation. Reflectivity was relatively uniform throughout the grid and

decreases with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-152 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.1 mbs.

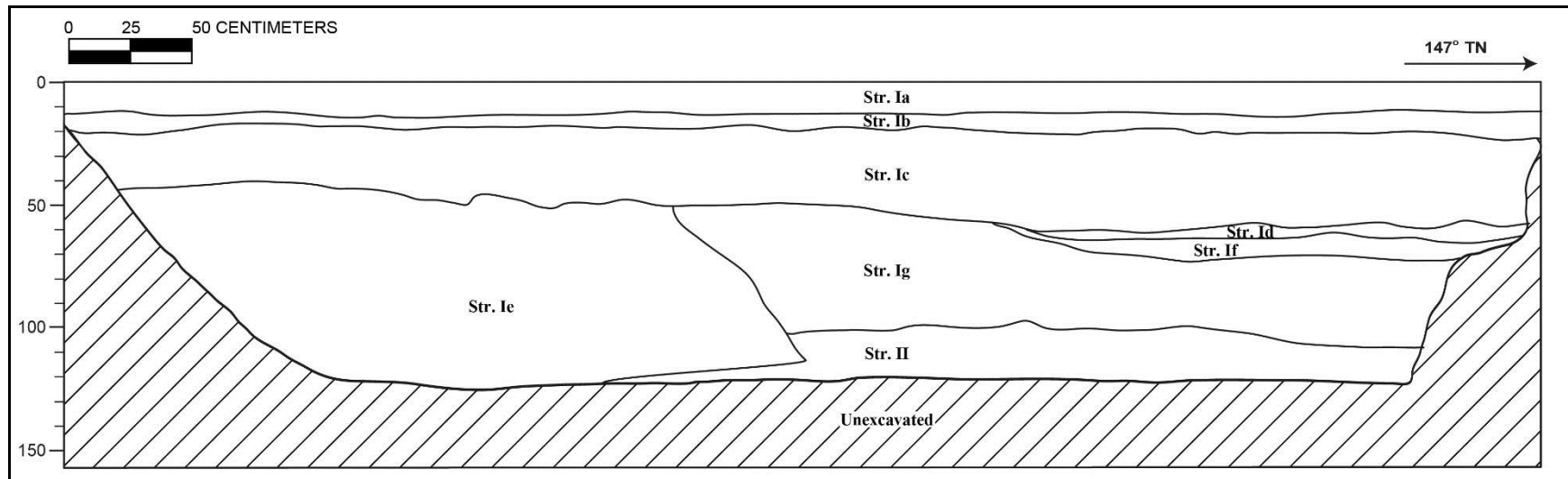
Summary: T-152 was excavated to a depth of 1.26 mbs and beneath the water table at 1.22 mbs. T-152 consisted of fill (Ia-Ig) overlying natural sediment (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). Four historic artifacts (Acc. # 152-A-1 and A-4) were collected from T-152. Artifacts collected from Strata Ic/Id and Ig indicated a late nineteenth to early twentieth century date for the fill event. A single *Sus scrofa* sacral vertebra and a *Canis lupus familiaris* mandible fragment were collected individually during excavation from Stratum Ig (0.52-1.1 mbs). Neither bone showed evidence of cultural modification. Two bulk sediment samples were collected from Stratum Ig within T-152 between 0.52-1.10 mbs (4.0 L) and between 0.61-0.76 mbs (14.0 L). The results of sample analysis documented a relative abundance of various marine shell species, some of which, along with the presence of fish bone and mammal bone, may be considered traditional food refuse (midden). No cultural resources were identified within T-152.



T-152 general location (view to southeast).



T-152 northeast profile wall (view to north).



T-152 northeast wall profile.

T-152 Stratigraphic Description for northeast wall.

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	15-25	Fill; 10 YR 5/1 (gray); very gravelly loam; structureless, single-grain; moist; loose consistency; non-plastic; terrigenous origin; very abrupt, smooth lower boundary; gravel base course
Ic	20-62	Fill; 2.5 Y 8/3 (pale yellow); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported crushed coral fill
Id	62-65	Fill; 2.5 Y 8/2 (pale yellow); silty clay loam; structureless, massive; moist, firm consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; common, very fine root remnants (rust colored)
Ie	45-126	Fill; 10 YR 5/2 (grayish) with common mottles sand colored; gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; lower boundary not visible; historic intrusive event
If	65-74	Fill; 10 YR 6/3 (pale brown); loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; likely locally procured Jaucas sand
Ig	52-110	Fill; 10 YR 5/2 (grayish brown); loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained marine shell
II	100-126	Natural; 10 YR 4/1 (dark gray); sandy clay loam; moderate, fine-medium, blocky structure; moist, friable consistency; slightly plastic; lower boundary not visible



T-152 glass bottle fragments of one bottle (Acc. # 152-A-2) from Strata Ic-II

3.51 Test Excavation 153 (T-153)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-050:067 & 2-1-052:022
Elevation Above Sea Level:	1.52 m
UTM:	618567 mE, 2355601 mN
Max Length/Width/Depth:	6.7 m / 0.85 m / 1.60 m
Orientation:	144 / 324° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 153 (T-153) was located in the southeast-bound lane of Halekauwila Street, approximately 50 m northwest of the Halekauwila Street and Ahui Street intersection. T-153 was located on private property. The closest utilities to T-153 were two sewer utilities 2.4 m northeast and 1.4 m southeast of the test excavation. The excavation surface was level with the surrounding roadcut surface.

Summary of Background Research and Land Use: The 1897 Monsarrat map of Honolulu indicated T-153 was located within R.S. Cooke Fertilizer Works and approximately 140 m southwest of Queen Street. The 1884 Bishop Honolulu map showed T-153 approximately 42 m south of LCA 1504, which was documented as having one house lot with a house, a pond, salt land and two taro patches (*lo'i kalo*) awarded to Pahiha. T-153 was 47 m southeast of LCA 1503:1 which contained two fish ponds awarded to Pua'a. The 1953 Army Mapping Service map indicated T-153 was approximately 175 m southeast of Mother Waldron Playground.

Previous archaeology in the vicinity included an archaeological monitoring project at the Kaka'ako Improvement District 3 area. In total, 20 human burials were encountered during this project. Eleven of these burials (SIHP #50-80-14-5820) were found in and around Mother Waldron Park (SIHP #50-80-14-1388) directly adjacent to the West Kaka'ako Zone corridor, and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP #50-80-14-4380).

Documentation Limitations: T-153 was excavated to the coral shelf at a depth of 1.60 mbs. There were no specific factors that limited documentation of T-153.

Stratigraphic Summary: The stratigraphy of T-153 consisted of fill strata overlying natural sediment. Observed strata for T-153 included asphalt (Ia), very gravelly loam (Ib), gravelly sand (Ic), sandy clay (Id), and clay fill (Ie) overlying natural clay loam (II) and loamy sand (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: One artifact was collected from Stratum II, right below Stratum Ie. The artifact was a green glass bottle. This indicates continued post-contact use.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: A single *Bos taurus* (possible) cortical bone fragment, and a *Canis lupus familiaris* tooth fragment (Broken ½ mandibular molar 1) were collected individually during excavation from Stratum Ib (at 0.36 mbs). Neither showed evidence of cultural modification, but the presence of *Bos taurus* (an introduced species) indicates a post-Contact origin.

Sample Results: A total of three bulk sediment samples were collected within T-153 including two samples from Stratum II at 1.23 mbs and between 1.32 and 1.41 mbs, and one sample from Stratum III at 1.50 mbs. The sample from Stratum II at 1.23 mbs and the sample from Stratum III were taken from the excavation floor and are not depicted on the stratigraphic profile. All of the samples were wet-screened.

The 2.0-liter sample collected from Stratum II at a depth of 1.23 mbs contained terrestrial and/or marine snails (4.0 g) and seeds of *Ruppia maritima* (0.1 g).

The 4.0-liter sample from the base of Stratum II between 1.32 and 1.41 mbs contained crustacean (0.1 g), Mytilidae *Brachidontes crebristriatus* (0.1 g), Neritidae (0.1 g), marine and/or terrestrial snail shells (6.3 g), bivalve fragments (0.1 g), Fasciolariidae (0.1 g), Hipponicidae *Hipponix* spp. (0.1 g), Melampidae *Melampus castaneus* (0.1 g), wood framgnets (0.3 g), *Ruppia maritima* seeds (0.1 g), and dog (*Canis lupus familiaris*) bone (2.4 g).

The 4.0-liter sample from Stratum III a depth of 1.50 mbs contained Mytilidae *Brachidontes crebristriatus* (5.7 g), Trochidae (0.5 g), crustacean (0.3 g) and Tellinidae (0.1 g).

The results of sample analysis indicated the presence of possible traditional food refuse (shell midden) within Stratum II as well as natural marine components within Stratum III. Stratum II also contained dog bone, a Polynesian-introduction that may originate from the pre- and/or post-Contact period.

GPR Discussion: A review of amplitude slice maps indicated a linear feature that corresponds to the concrete curb observed within the side wall of the excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-153 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.35 mbs. An anomaly was observed in the profile and could correspond to the metal utility pipe encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-153 was excavated to the coral shelf at a depth of 1.60 mbs. The stratigraphy of T-153 consisted of fill strata (Ia-Ie) overlying natural sediment (II-III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). One artifact was collected from Stratum II, right below Stratum Ie. The artifact was a green glass bottle. A single *Bos taurus* (possible) cortical bone fragment, and a *Canis lupus familiaris* tooth fragment (Broken ½ mandibular molar 1) were collected individually during excavation from Stratum Ib (at 0.36 mbs). Neither showed evidence of cultural modification, but the presence of *Bos taurus* (an introduced species) indicates a post-Contact origin. A total of three bulk sediment samples were collected within T-153 including two samples from Stratum II at 1.23 mbs and between 1.32 and

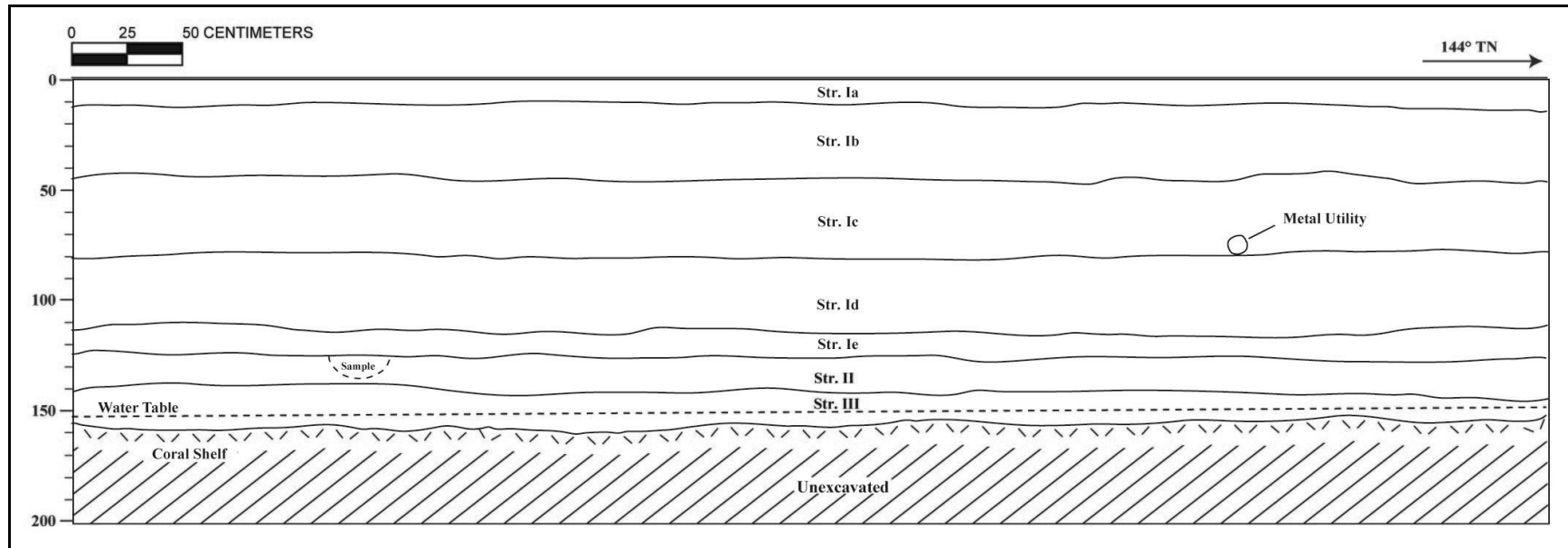
1.41 mbs, and one sample from Stratum III at 1.50 mbs. The results of sample analysis indicated the presence of possible traditional food refuse (shell midden) within Stratum II as well as natural marine components within Stratum III. Stratum II also contained dog bone, a Polynesian-introduction that may originate from the pre- and/or post-Contact period. No cultural resources were identified within T-153.



T-153 general location, view to west



T-153 northeast wall profile, view to north



T-153 northeast wall profile

T-153 Stratigraphic Description

Stratum	Depth(cmbs)	Description
Ia	0-10	Asphalt
Ib	10-45	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly loam; structureless, single-grain; moist; loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; contained faunal bone and tooth; gravel base course
Ic	42-80	Fill; 10 YR 7/4 (very pale brown); gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
Id	75-116	Fill; 10 YR 8/3 (very pale brown); sandy clay; structureless, massive; moist, friable consistency; slightly plastic; marine origin; abrupt, smooth lower boundary; fill layer with clay and sand mixed together
Ie	110-125	Fill; GLEY 1 7/1 SGY (light greenish gray); clay; structureless, massive; moist, firm consistency; plastic; mixed origin; very abrupt, smooth lower boundary; hydraulic fill
II	120-141	Natural; 10 YR 3/3 (dark brown); clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; clear, wavy lower boundary; few, fine roots; faunal bone, fresh water shells, organic layer
III	136-160	Natural; 10 YR 6/1 (gray); loamy sand; weak, coarse, crumb structure; wet, non-sticky consistency; marine origin; lower boundary not-visible



T-153 glass bottle artifact fragment from Stratum II

3.52 Test Excavation 154 (T-154)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-1-052:022
Elevation:	1.6 m
UTM:	618582 mE, 2355583 mN
Max Length / Width / Depth:	5.8 m / 0.71 m / 1.46 m
Orientation:	142 / 322° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 154 (T-154) was located 25 m northwest of the Halekauwila Street and Ahui Street intersection in the southeast-bound lane of Halekauwila Street. T-154 was located on private property owned by Victoria Ward Ltd. A sewer line was located 2.5 m northwest of T-154 and the test excavation was less than a meter southwest of a sidewalk.

Summary of Background Research and Land Use: T-154 was located within LCA 387, which was awarded to ABCFM (A.B. Mission). The 1883 Baldwin map showed T-154 approximately 400 m north of the shoreline. By 1884, Leper Hospital was located 395 m west of T-154 (1884 Bishop map). The 1887 Wall map showed urban development within the area and T-154 still within a marsh/wetland environment. The Monsarrat map of 1897 showed the development of main streets and T-154 within the area of A.S. Cooke Fertilizer Works. By 1919 T-154 was south of a heavily developed area and by 1933 urban development surrounded the excavation area (1919 and 1933 War maps). The Army Mapping Service map indicated that by 1953 T-154 was within modern day Halekauwila Street.

Two previous archaeological studies were conducted in the vicinity. The first was a 1991 preliminary archaeological assessment of a land parcel (54 m by 32 m) located 25 m southeast of T-154. The study concluded that the area may have been extensively utilized for fishpond farming and making salt, and recommended that subsurface testing should precede new construction (Chiogioji and Hammatt, 1991). A 2000 monitoring project in the same area resulted in the discovery of a cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were in and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380) (Winieski and Hammatt, 2000).

Documentation Limitations: T-154 was excavated to a depth of 1.46 mbs and below the water table at 1.40 mbs. There were no specific factors that limited documentation of T-154.

Stratigraphic Summary: The stratigraphy of T-154 consisted of fill layers overlying natural sediment to the base of excavation. Observed strata included asphalt (Ia), very gravelly loam (Ib), loamy sand (Ic), gravelly sand (Id), clay fill (Ie and If), overlying natural loamy clay with peaty material (II), and natural silty sand (III). The stratigraphy conformed to the USDA soil designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sample (3 L) was collected from Stratum II between 1.30 and 1.38 mbs. The sediment sample was wet-screened. The sample contained seeds of *Ruppia maritima* (0.7 g), crustacean (0.1 g), Neritidae (0.1 g), terrestrial and/or marine snails (1.5 g), limpets (0.7 g), Melampidae *Melampus castaneus* (0.1 g), and roots (0.6 g).

The results of sample analysis documented the mixed depositional origin of Stratum II.

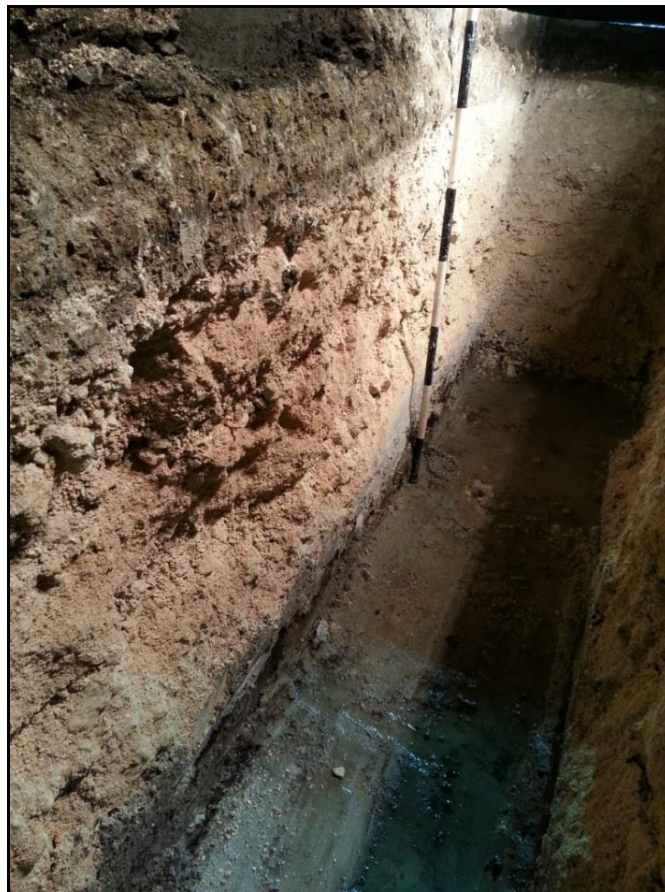
GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-154 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.3 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.5 mbs.

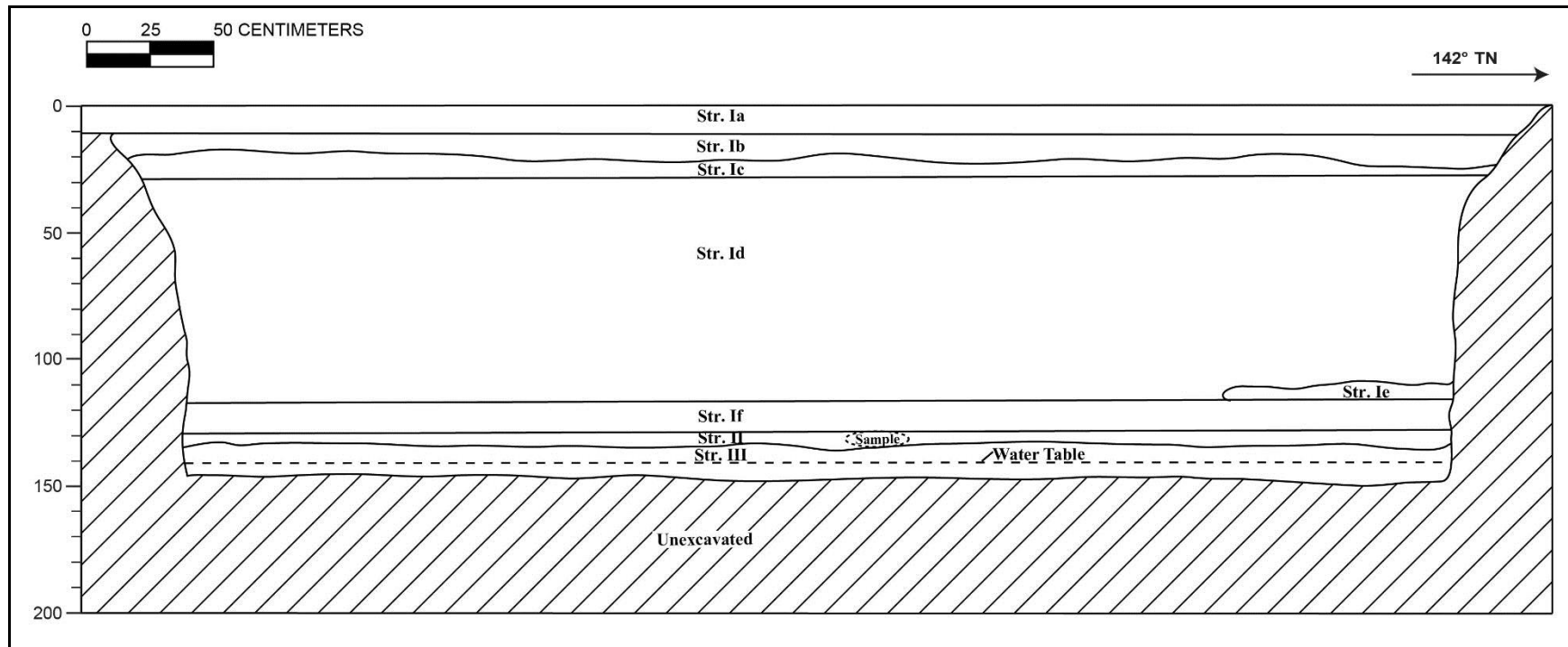
Summary: T-154 was excavated to a maximum depth of 1.46 mbs. The stratigraphy of T-154 consisted of fill layers (Ia-If) overlying natural sediment (II-III) to the base of excavation. The stratigraphy conformed to the USDA soil designation of Fill land. One bulk sample (3 L) was collected from Stratum II between 1.30 and 1.38 mbs. The results of sample analysis documented the mixed depositional origin of Stratum II. No cultural resources were identified within T-154.



T-154 general location, view to northwest



T-154 northeast wall profile, view to southeast



T-154 northeast wall profile

T-154 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-24	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly loam; structureless, single-grain; moist; loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	17-24	Fill; 10 YR 6/3 (pale brown); loamy sand; structureless, single-grain; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; imported fill
Id	28-116	Fill; 10 YR 8/3 (very pale brown); gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported fill
Ie	109-117	Fill; 10 YR 8/1 (white); clay; structureless, massive; wet, sticky consistency; very plastic; terrigenous origin; abrupt, smooth lower boundary; hydraulic fill
If	116-127	Fill; 10 YR 7/1 (light gray); clay; structureless, massive; wet, very sticky consistency; very plastic; terrigenous origin; abrupt, smooth lower boundary; hydraulic fill
II	127-135	Natural; 10 YR 3/3 (dark brown); loamy clay; structureless, massive; wet, sticky consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; natural sediment from marsh/wetlands, peaty
III	132-146	Natural; 10 YR 6/1 (gray); silty sand; structureless, single-grain; wet, slightly sticky consistency; non-plastic; marine origin; lower boundary not visible; natural sediment with estuary sand

3.53 Test Excavation 155 (T-155)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-052:022
Elevation Above Sea Level:	1.43 m
UTM:	618624 mE, 2355529 mN
Max Length/Width/Depth:	6.07 m / 0.73 m / 1.48 m
Orientation:	122 / 302° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Ewa silty clay loam (EmA)

Setting: Test Excavation 155 (T-155) was located within the southeast-bound lane of Halekauwila Street, approximately 30 m southeast of the Ahui and Halekauwila Street intersection. T-155 was located on private property. T-155 was moved 6 m southeast from the original proposed location. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: According to the 1884 Bishop Map, T-155 was located within Kukuluāe'o and was 355 m north of the shoreline. By 1897, several roads had been constructed north of T-155 (1897 Monsarrat map). The 1919 War Honolulu map depicted massive urban development throughout the area surrounding T-155. The development continued through 1953 (1933 and 1943 War Honolulu maps, 1953 Army Mapping Service Honolulu Map). LCA records indicated that land-use in the region was confined to taro cultivation, fishpond farming, and salt-production. T-155 was located within a very large LCA (387) which was awarded to ABCFM (A.B. Mission) and used for salt production. LCA 1503 was located 22 m south of T-155 and was awarded to Pua'a. LCA 9549 was located 75 m west of T-155.

Two historic properties and two archaeological studies were located in the vicinity of T-155. Mother Waldron playground (SIHP# 50-80-14-01388) was located 243 m northwest of T-155. The Yee/Kobayashi Store (SIHP #50-80-14-09739) was located 170 m east of T-155. A reconnaissance-level archaeological assessment was performed about 13 m east of T-155 (Chiogioji & Hammatt 1991). The study concluded that the area may have been extensively utilized for fishpond farming and making salt, and recommended that subsurface testing before beginning construction (Chiogioji and Hammatt, 1991). In 2000, a monitoring project 125 m northwest from T-155 resulted in the discovery of a sub-surface cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were located within and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP# 50-80-14-4380) (Winieski and Hammatt, 2000).

Documentation Limitations: T-155 was excavated to the coral shelf at 1.48 mbs and beneath the water table at 1.46 mbs. There were no specific factors that limited documentation of T-155.

Stratigraphic Summary: The stratigraphy of T-155 consisted of fill strata over natural sediment to the coral shelf. Observed strata included asphalt (Ia), extremely gravelly sand (Ib), clay fill (Ic), and hydraulic fill clay (Id), overlying natural peaty clay (II) and sandy clay with marine shell (III) to the coral shelf. The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

Artifacts Discussion: No artifacts were observed

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of four bulk sediment samples were collected from within T-155 including one sample from Stratum Ic between 0.83 mbs and 1.07 mbs, Stratum Id between 1.07 mbs and 1.22 mbs, Stratum II between 1.22 mbs and 1.24 mbs, and Stratum III between 1.24 mbs and 1.48 mbs. All of the samples were wet-screened.

The 1-liter bulk sample collected from Stratum Ic, and the 1-liter bulk sample collected from Stratum Id yielded no cultural material.

The 1-liter bulk sample from Stratum II contained burned crustacean (0.2 g), Echinodermata *mathaei* sp. (0.1 g), limpets (0.1 g), *Ruppia maritima* seeds (0.4 g), and an unidentified small mammal bone (0.1 g).

The 1-liter bulk sample from Stratum III contained limpets, gastropods, bivalves, worn crustacean, and Echinodermata (3.4 g total). *Ruppia maritima* seeds (0.4 g) were also present in the sample.

The results of sample analysis documented sparse amounts of marine shell and *Ruppia maritima* seeds Stratum II and III as well as one unidentified small mammal bone in Stratum II. All of the content of Stratum II and III were considered to be naturally-occurring.

GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-155 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.3 mbs and again at 0.6 mbs. An anomaly was observed in the profile but was not encountered during excavation. The maximum depth of clean signal return was approximately 1.25 mbs.

Summary: T-155 was excavated to the coral shelf at 1.48 mbs, beneath the water table at 1.46 mbs. The stratigraphy of T-155 consisted of fill strata over natural sediment to the coral shelf (Ia-Id) (II-III). The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA). A total of four bulk sediment samples were collected from within T-155 including one sample from Stratum Ic between 0.83 mbs and 1.07 mbs, Stratum Id between 1.07 mbs and 1.22 mbs, Stratum II between 1.22 mbs and 1.24 mbs, and Stratum III between 1.24

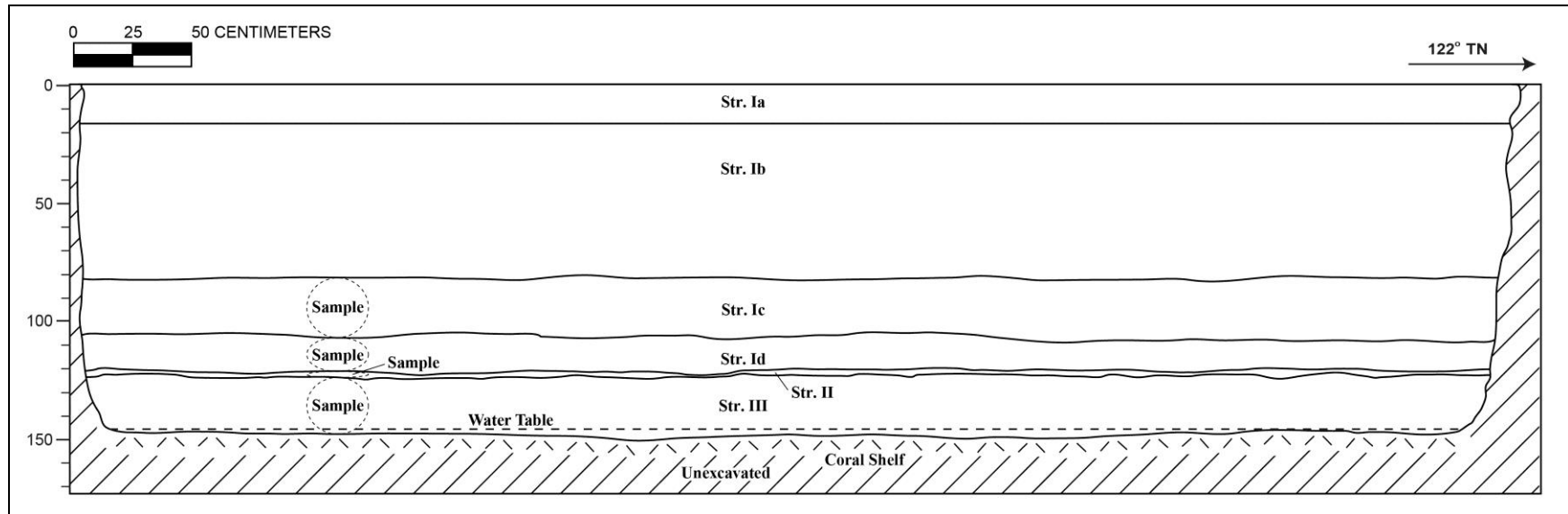
mbs and 1.48 mbs. The results of sample analysis documented sparse amounts of marine shell and *Ruppia maritima* seeds Stratum II and III as well as one unidentified small mammal bone in Stratum II. All of the content of Stratum II and III were considered to be naturally-occurring. No cultural resources were identified within T-155.



T-155 general location, view to southeast



T-155 north profile, view to east



T-155 north wall profile

T-155 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-16	Asphalt
Ib	16-83	Fill; 2.5 Y 8/1 (white); extremely gravelly sand; moderate, coarse, granular structure; dry, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral
Ic	83-107	Fill; 2.5 Y 3/2 (pale brown); clay; weak, very fine, blocky structure; moist, firm, weak consistency; slightly plastic; terrigenous origin; diffuse, smooth lower boundary
Id	107-122	Fill; GLEY 1 7/5G (light greenish gray); clay; weak, fine, blocky structure; moist, very friable/sticky, weak consistency; plastic; marine origin; diffuse, smooth lower boundary; hydraulic fill
II	122-124	Natural, A-horizon; 10 YR 4/3 (brown); peaty clay; weak, medium to coarse, blocky structure; moist, very friable consistency; slightly plastic; mixed origin; diffuse, smooth lower boundary; organic matter
III	124-148	Natural; GLEY 1 7/10Y (greenish gray); gravelly sandy clay; massive, weak, coarse, blocky structure; moist, very friable consistency; non-plastic; mixed origin; lower boundary not visible

3.54 Test Excavation 156 (T-156)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-052:022
Elevation Above Sea Level:	1.27 m
UTM:	618651 mE, 2355496 mN
Max Length/Width/Depth:	6.67 m / 0.71 m / 1.49 m
Orientation:	140 / 320° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 156 (T-156) was located in the southeast-bound lane of Halekauwila Street, 8 m northwest of the Kamani and Halekauwila Street intersection. T-156 was located on private property. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: According to the 1883 Baldwin map, T-156 was within an area of pond fields. The 1884 Bishop Honolulu map indicated that T-156 was approximately 167 m southwest of LCA 1504, which was documented as having one house lot with a house, pond and salt land, as well as two taro patches (*lo 'i kalo*) awarded to Pahiha. T-156 was 180 m southeast from LCA 1503:1 which contained two fish ponds and was awarded to Pua'a. The 1953 Army Mapping Service map indicated T-153 was approximately 175 m southeast of Mother Waldron Playground.

Previous archaeology in the vicinity included an archaeological monitoring project at the Kaka'ako Improvement District 3 area. In total, 20 human burials were encountered. Eleven of the burials (SIHP #50-80-14-5820) were in and around Mother Waldron Park (SIHP #50-80-14-1388) directly adjacent to the West Kaka'ako Zone corridor, and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP #50-80-14-4380).

Documentation Limitations: T-156 was excavated to a depth of 1.49 mbs and beneath the water table at 1.40. A concrete jacket was encountered near the middle of T-155 at 0.51 mbs, limiting the excavation of T-156.

Stratigraphic Summary: The stratigraphy of T-156 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included asphalt (Ia), very gravelly silty sandy loam (Ib), coarse to medium sand (Ic), fine silty sand (Id), and clay fill (Ie), overlying natural sandy clay (II) and silty sand (III) to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifact Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sediment sample (0.75 L) was collected from Stratum II between 0.85 and 1.0 mbs. The sample was wet-screened. The sample contained Melampidae *Melampus castaneus* (0.1 g), Neritidae *Nerita picea* (0.4 g), Crustacean (0.1 g), Echinodermata *mathaei sp./diadema sp.* (0.1 g) and fish bone (0.1 g).

The results of sample analysis indicated the presence of marine shell and fish bone within Stratum II, which are considered to be naturally-occurring components.

GPR Discussion: A review of amplitude slice maps indicated a linear feature on the southeast end of the excavation which was not encountered but a concrete jacket was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately.

GPR depth profiles for T-156 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs and again at approximately 0.65 mbs. An anomaly was observed in the profile and corresponds with the concrete jacket encountered during excavation. The maximum depth of clean signal return was approximately 1.5 mbs.

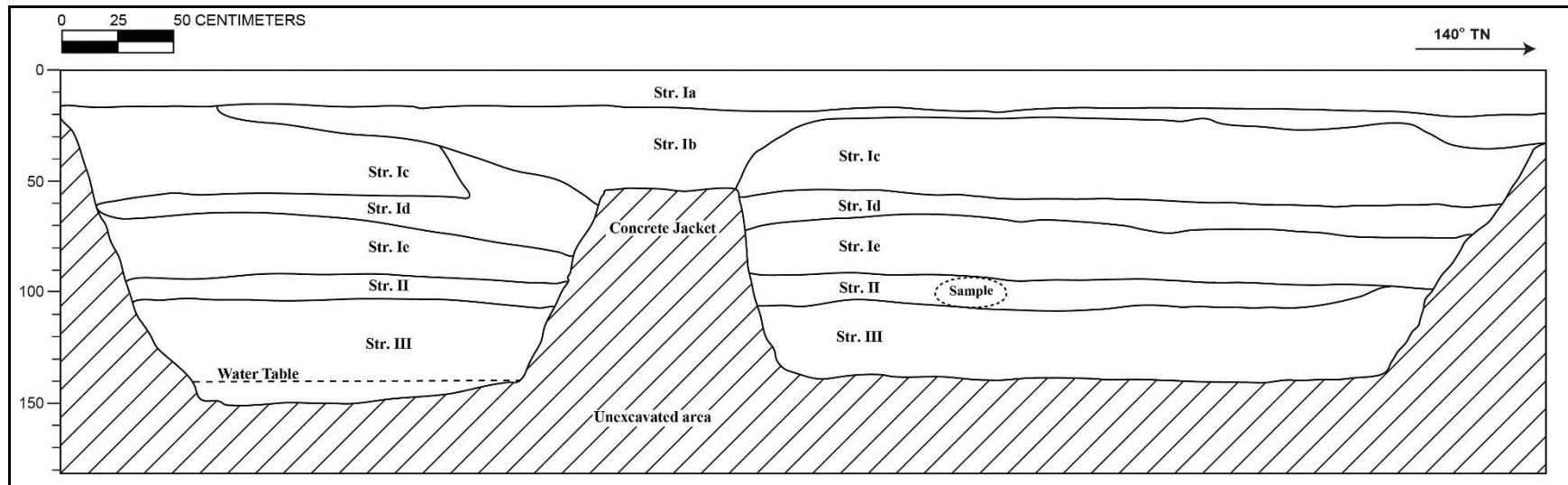
Summary: T-156 was excavated to a depth of 1.49 mbs, beneath the water table at 1.40. The stratigraphy of T-156 consisted of fill strata (Ia to Ie) overlying natural sediment (II and III) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). One bulk sediment sample (0.75 L) was collected from Stratum II between 0.85 and 1.0 mbs. The results of sample analysis indicated the presence of marine shell and fish bone within Stratum II, which are considered to be naturally-occurring components. No cultural resources were identified within T-156.



T-156 general location, view to southwest



T-156 northeast profile wall, view to north



T-156 northeast wall profile

T-156 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	15-57	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly silty sandy loam; moderate, fine-medium, granular structure; moist, friable, weak consistency; non-plastic; terrigenous origin; wavy, discontinuous lower boundary; contained basalt; related to concrete jacket
Ic	15-58	Fill; 2.5 YR 8/3 (pale yellow); coarse to medium sand; structureless, single-grain; moist, loose, weak consistency; non-plastic; marine origin; diffuse, discontinuous lower boundary; contains coral; crushed coral fill
Id	33-80	Fill; 2.5 Y 7/4 (pale yellow); fine silty sand; structureless, single-grain; moist, loose, weak consistency; non-plastic; marine origin; diffuse, smooth lower boundary
Ie	65-93	Fill; GLEY 1 5/10Y (greenish gray); clay; structureless, massive; wet, sticky, strong consistency; very plastic; marine origin; diffuse, smooth lower boundary; hydraulic fill
II	90-108	Natural; 10 YR 4/2 (dark grayish brown); sandy clay; moderate, fine, medium, granular structure; moist, friable consistency; slightly plastic; mixed origin; diffuse, wavy lower boundary
III	95-149	Natural; 10 YR 5/2 (grayish brown); coarse silty sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; lower boundary not visible; natural sand

3.55 Test Excavation 157 (T-157)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-052:022
Elevation Above Sea Level:	1.28 m
UTM:	618670 mE, 2355472 mN
Max Length/Width/Depth:	3.66 m / 0.92 m / 1.17 m
Orientation:	142 / 322° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation :	Fill land (FL)

Setting: Test Excavation 157 (T-157) was located in the southeast-bound, far right lane of Halekauwila Street, approximately 10 southeast of the intersection of Halekauwila and Kamani Street. T-157 was located on private property. T-157 was 1.8 m southwest of a storm drain and 1.7 m northwest of a sewer line. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: T-157 was located within LCA 387, which was awarded to A.B. Mission. The 1884 Bishop map showed T-157 within a wetland environment. In 1887 there was some urban development present in the area and T-157 was still within marsh/wetlands (1887 Wall map). The Monsarrat map of 1897 showed the development of main streets and that T-157 was approximately 200 m southeast of A.S. Cooke Fertilizer Works. By 1919 T-157 was within a heavily developed area and a grid pattern was in place (1919 War map). The 1953 Army Mapping Service map indicated that by 1953 T-157 was within modern day Halekauwila Street.

Two archaeological studies were conducted in the vicinity. The first was a 1991 preliminary archaeological assessment of a land parcel (54 m by 32 m) located 33 m south of T-157. The study concluded that the area may have been extensively utilized for fishpond farming and making salt, and recommended that subsurface testing should precede new construction (Chiogioji and Hammatt 1991). A more recent monitoring project in the same area resulted in the discovery of a cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were in and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380) (Winieski and Hammatt 2000).

Documentation Limitations: T-157 was excavated to a depth of 1.17 mbs, and below the water table at 1.12 mbs. There were no specific factors that limited documentation of T-157.

Stratigraphic Summary: The stratigraphy of T-157 consisted of fill strata over natural sediment to the base of excavation. Observed strata included asphalt (Ia), extremely cobbly sand (Ib), fine-grained sand fill (Ic), very gravelly sand (Id), and silty clay (hydraulic) fill (Ie) overlying natural medium-grained sand (II), and loamy sand (III). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sediment sample (1.5 L) was collected from Stratum II between 0.88 and 0.98 mbs. The sample was wet-screened. Sample content included midden, such as crustacean (1.7 g), Mytilidae *Brachidontes crebristriatus* (0.8 g), and Echinodermata *mathaei* sp./*diadema* sp. (0.1). Sample content also contained non-midden shell such as micro-shells/gastropods (5.7 g) and Melampidae *Melampus castaneus* (0.5 g).

One bulk sediment sample (1.5 L) was collected from Stratum III between 1.03 and 1.13 mbs. The sample was wet-screened. Sample content included midden, such as burned crustacean (1.2 g) and Echinodermata *mathaei* sp. (0.2 g). Sample content also contained non-midden shell such as micro gastropods, limpets, and bivalves (2.4 g).

GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-157 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.25 mbs. No utilities or anomalies were observed in the profile. The maximum depth of clean signal return was approximately 1.5 mbs.

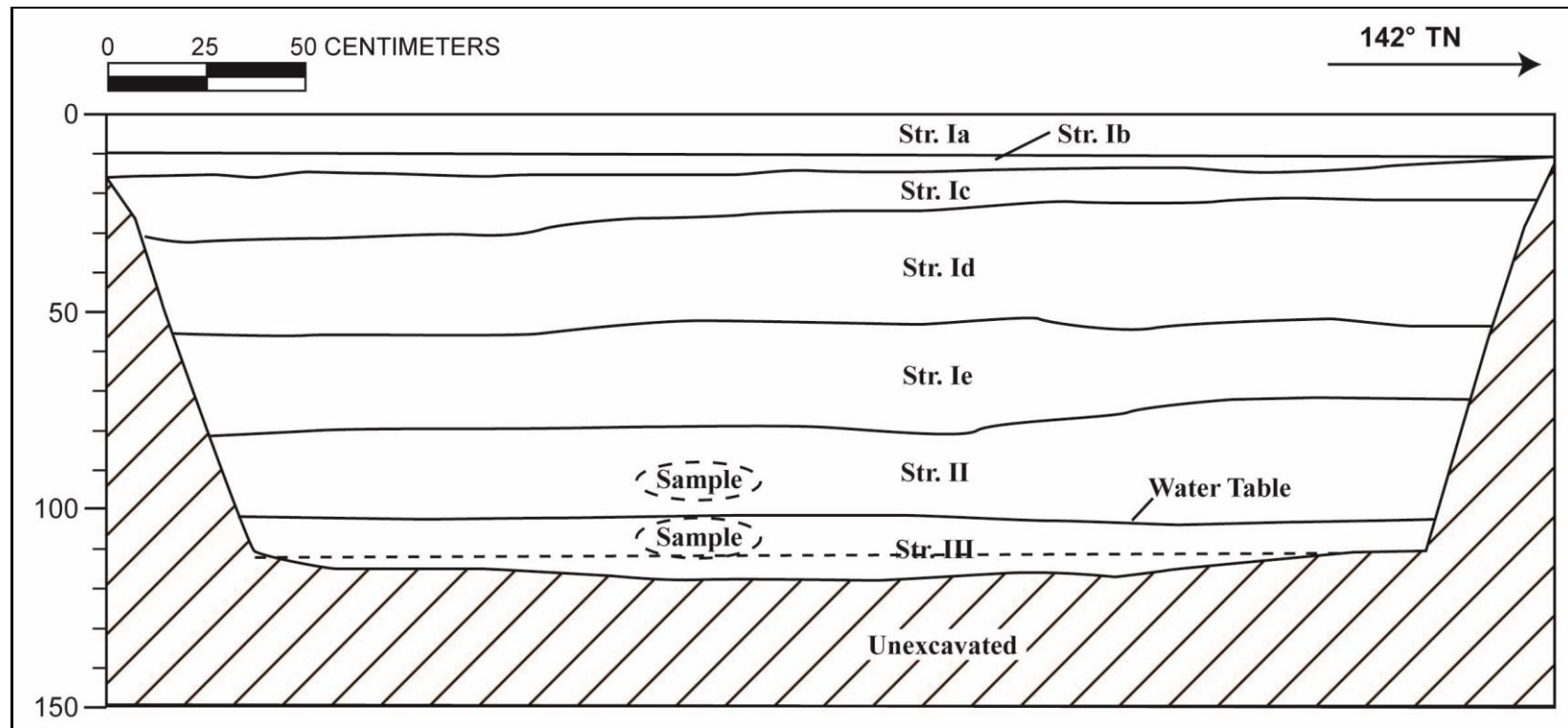
Summary: T-157 was excavated to a depth of 1.17 mbs, and below the water table at 1.12 mbs. The stratigraphy of T-157 consisted of fill strata over natural sediment to the base of excavation (Ia-Ie) (II-III). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). No cultural resources were identified within T-157.



T-157 general location, view to east



T-157 northeast profile wall, view to east



T-157 northeast wall profile

T-157 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-15	Fill; 10 YR 6/2 (brownish gray); extremely cobbly sand; structureless, single-grain; dry, weakly coherent consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill
Ic	11-32	Fill; 10 YR 8/3 (very pale brown); sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary
Id	21-55	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill
Ie	52-80	Fill; 10 YR 7/3 (very pale brown); silty clay; structureless, massive; moist, firm consistency; very plastic; marine origin; smooth, very abrupt lower boundary; hydraulic fill clay
II	70-102	Natural; 2.5 Y 8/3 (pale yellow); sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; some roots and organics at Stratum II/ III interface
III	102-117	Natural; GLEY 1 6/10Y (greenish gray); loamy sand; structureless, single-grain; moist, very friable consistency; non-plastic; marine origin; lower boundary not visible; common, very fine to fine roots; marine sediment contained roots and organics

3.56 Test Excavation 158 (T-158)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-052:27
Elevation Above Sea Level:	1.26 m
UTM:	618673 mE, 2355462 mN
Max Length/Width/Depth:	3.75 m / 0.93 m / 1.25 m
Orientation:	320 / 140° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 158 (T-158) was located approximately 30 meters southeast of Halekauwila Street and Kamani Street intersection, within a parking lot southwest of Halekauwila Street. A storm drain was located approximately 1.5 m northeast of T-158. T-158 was located on private property owned by Victoria Ward Ltd. The excavation surface was level with the surrounding ground surface.

Summary of Background Research and Land Use: LCA records indicate the land-use in the region was confined to taro cultivation, fishpond farming, and salt-production. T-158 was located within a very large LCA (387) which was awarded to ABCFM (A.B. Mission) and was used for salt production. According to the 1883 Baldwin map, T-158 was located within an area where plots for salt production or taro cultivation were located, based on the LCA documentation for the surrounding area. Bishop's 1884 Honolulu map showed that T-158 was located within Kukuluae'o and was 330 m northeast of the shoreline. Monsarrat's 1897 Honolulu map showed some development north of T-158. By 1919, there was massive urban development (1919 War Map). 1927 US Coast aerial showed T-159 to be within a street grid, and the 1939-41 Army Air Corp aerial showed T-158 on a street alignment with warehouses to southwest. The development continued through 1953 (1933 and 1943 War Honolulu, 1953 Army Mapping Service Honolulu Map).

Previous archaeology within the vicinity of T-158 includes several studies. A reconnaissance-level archaeological assessment was performed approximately 45 m north of T-158 which concluded that the area may have been extensively utilized for fishpond farming and making salt, and recommended subsurface testing before beginning construction (Chiogioji and Hammatt 1991). An archaeological monitoring project 225 m northwest from T-158 resulted in the discovery of a sub-surface cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were located within and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380) (Winieski and Hammatt 2000).

Documentation Limitations: T-158 was excavated to below the water table at a depth of 1.25 mbs.

Stratigraphic Summary: The stratigraphy of T-158 consisted of fill strata to the water table. Observed strata included asphalt (Ia), very gravelly sand (Ib), clay fill (Ic), loamy sand (Id), and very fine sand fill (Ie). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

GPR Discussion: A review of amplitude slice maps indicated a linear feature but it was not encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-158 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. An anomaly was observed in the profile but was not encountered during excavation. The maximum depth of clean signal return was approximately 1.3 mbs.

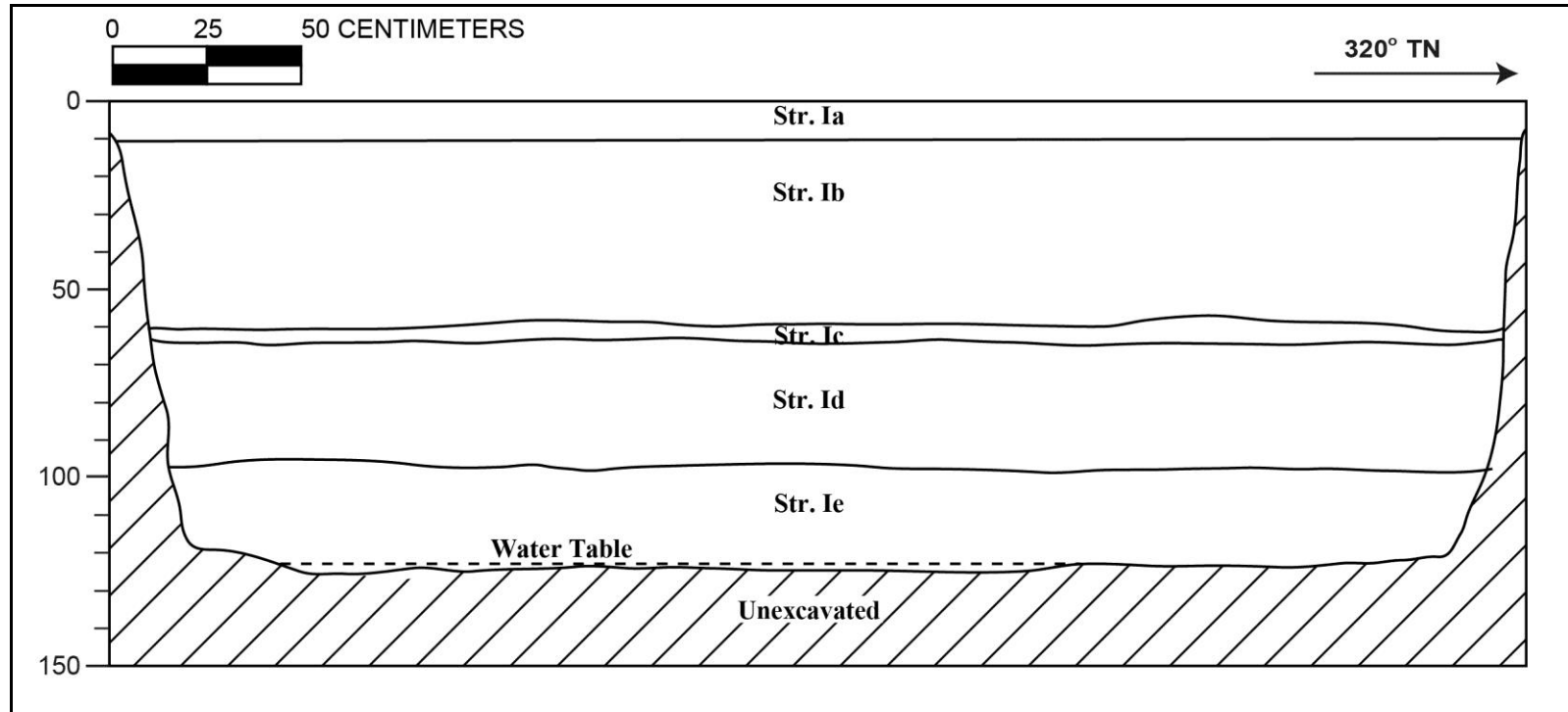
Summary: T-158 was excavated to the water table at a depth of 1.25 mbs. The stratigraphy of T-158 consisted of fill strata (Ia-Ie) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). No natural sediment was observed. No cultural materials were observed.



T-158 general location, view to west



T-158 southwest profile wall, view to west



T-158 southwest wall profile

T-158 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-60	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; structureless; single-grain; weakly coherent, dry, loose, non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary; few medium roots; crushed coral fill
Ic	60-65	Fill; 10 YR 8/3 (very pale brown); clay; moderate, very fine, blocky structure; moist, weakly coherent, very friable, slightly sticky, weak consistency; plastic; terrigenous origin; abrupt, smooth boundary; few, medium roots; hydraulic fill clay
Id	65-98	Fill; 10 YR 8/4 (very pale brown); with common, mottles of 10 YR 6/2 (light brownish gray); loamy sand; structureless, single-grain; moist, loose, weak consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; common, very fine roots; micro mollusks shells observed
Ie	98-125	Fill; 10 YR 8/3 (very pale brown); very fine sand; structureless, single-grain; wet, loose, non-sticky, weak consistency; non-plastic; marine origin; lower boundary not visible; few, very fine roots; micro shells observed

3.57 Test Excavation 159 (T-159)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-050:001
Elevation Above Sea Level:	1.65 m
UTM:	618687 mE, 2355473 mN
Max Length/Width/Depth:	3.08 m, 0.94 m, 1.68 m
Orientation:	318 / 128° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 159 (T-159) was located within a parking lot on the northeast side of Halekauwila Street, approximately 60 meters northwest of Halekauwila Street and Ward Avenue intersection. T-159 was located on private property owned by Victoria Ward Ltd. T-159 was relocated 0.16 m northeast of the original location to avoid utilities. An electric line was 2.4 m southwest of the T-159. The excavation surface was level with the surrounding land surface (parking lot), which was slightly elevated to Halekauwila Street.

Summary of Background Research and Land Use: LCA records indicate the land-use in the region was confined to taro cultivation, fishpond farming, and salt-production. T-159 was located within LCA 387 which was awarded to ABCFM (A.B. Mission) and was used for salt production. According to the 1883 Baldwin map, T-159 was located within an area where plots for salt production or taro cultivation were located, based on the LCA documentation for the surrounding area. Bishop's 1884 Honolulu map showed that T-159 was located within Kukuluae'o and was 330 m northeast of the shoreline. Monsarrat's 1897 Honolulu map showed some development north of T-159. By 1919, there was massive urban development (1919 War Map). 1927 US Coast aerial showed T-159 to be within a street grid, and the 1939-41 Army Air Corp aerial showed T-159 on a street alignment with warehouses to southwest. The development continued through 1953 (1933 and 1943 War Honolulu, 1953 Army Mapping Service Honolulu Map).

Previous archaeology within the vicinity of T-159 includes several studies. A reconnaissance-level archaeological assessment was performed approximately 35 m north of T-159 which concluded that this area may have been extensively utilized for fishpond farming and making salt, and recommended subsurface testing before beginning construction (Chiogioji and Hammatt 1991). An archaeological monitoring project 215 m northwest from T-159 resulted in the discovery of a sub-surface cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were located within and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380) (Winieski and Hammatt 2000).

Documentation Limitations: T-159 was excavated to a depth of 1.67 mbs and beneath the water table at 1.61 mbs. A concrete slab containing a utility pipe was present within the northwestern half of T-159 and limited documentation.

Stratigraphic Summary: The stratigraphy of T-159 consisted of fill strata overlying natural sediment. Observed strata included asphalt (Ia), gravelly sandy loam fill (Ib), gravelly sandy loam fill (Ic), gravelly sand fill (Id), silty clay fill (Ie), natural loamy sand (II), natural loamy sand (III), and sandy clay (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of three bulk sediment samples were collected from within T-159 including one sample from Stratum II at 1.27-1.37 mbs (1 L), Stratum III at 1.45-1.52 mbs (1 L), and Stratum IV at 1.55-1.65 mbs (1 L). The sediment samples from Stratum III and IV were collected from the excavation floor and are not depicted on the stratigraphic profile. All of the bulk samples were wet-screened.

The bulk sample collected from Stratum II contained no significant material. The bulk sample collected from Stratum III contained Crustacean (0.4g) and Echinodermata *mathaei* sp. (0.3g). The bulk sample collected from Stratum IV contained *Ruppia maritima* seeds (0.2 g) and crustacean (0.1 g).

The results of the analysis of bulk sediment samples documented the sparse presence of marine shell within Stratum III and IV and *Ruppia maritima* seeds within Stratum III. The content of both samples was considered to be naturally-occurring.

GPR Discussion: A review of amplitude slice maps indicated a linear feature on the northwest end of the excavation that corresponds to a concrete slab discovered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the concrete slab. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-159 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.25 mbs. An anomaly was observed in the profile and corresponds to the concrete slab encountered during excavation. The maximum depth of clean signal return was approximately 1.4 mbs.

Summary: T-159 was excavated to a depth of 1.67 mbs and beneath the water table at 1.61 mbs. The stratigraphy of T-159 consisted of fill strata (Ia-Ie) overlying natural sediment (II-IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). A total of three bulk sediment samples were collected from within T-159 including one sample from Stratum II at 1.27-1.37 mbs (1 L), Stratum III at 1.45-1.52 mbs (1 L), and Stratum IV at 1.55-1.65 mbs (1 L). The results of the analysis of bulk sediment samples documented the sparse

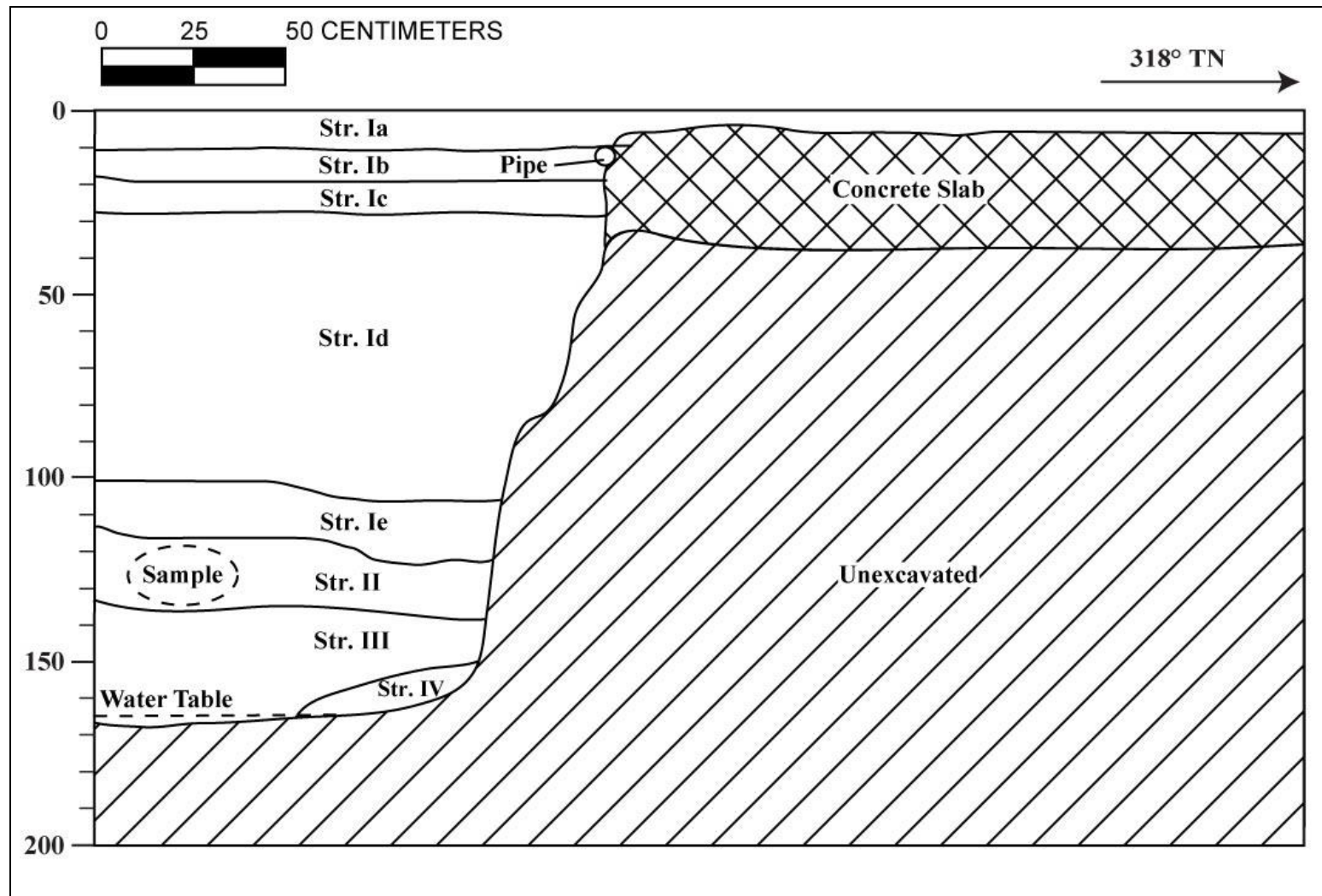
presence of marine shell within Stratum III and IV and *Ruppia maritima* seeds within Stratum III. The content of both samples was considered to be naturally-occurring. No cultural resources were identified.



T-159 general location (view to south).



T-159 southwest profile wall.



T-159 southwest wall profile.

T-159 Stratigraphic Description of southwest wall.

Stratum	Depth (cmbs)	Description
Ia	0-11	Asphalt
Ib	11-21	Fill; 10 YR 4/4 (dark yellowish brown); gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; few, medium roots; imported fill
Ic	20-30	Fill; 10 YR 4/4 (dark yellowish brown); gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; common, medium/coarse roots; imported fill
Id	28-110	Fill; 10 YR 8/3 (very pale brown); gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported crushed coral fill
Ie	103-126	Fill; 10 YR 8/2 (pale brown); silty clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; hydraulic fill
II	117-141	Natural, 10 YR 6/3 (pale brown); loamy sand; structureless, single-grain; wet, slightly sticky consistency; slightly plastic; mixed origin; clear, smoother lower boundary; former A-horizon
III	138-167	Natural; 10 YR 7/3 (very pale brown); loamy sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; mixed origin; diffuse, smooth lower boundary;
IV	153-167	Natural; 10 YR 6/1 (gray); sandy clay; weak, fine, blocky structure; wet, slightly sticky consistency; slightly plastic; marine origin; lower boundary not visible

3.58 Test Excavation 160 (T-160)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-1-050:062
Elevation Above Sea Level:	1.49 m
UTM:	618705 mE, 2355450 mN
Max Length/Width/Depth:	3.2 m, 0.90 m, 1.52 m
Orientation:	58 / 238° TN
Targeted Project Component:	Guideway Column
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 160 (T-160) was located in a paved parking lot (currently California Beach Rock N' Sushi) northeast of the Halekauwila Street near intersection of Halekauwila Street and Ward Avenue. The orientation of T-160 was rotated clockwise by 90 degrees from its proposed position (see plan view). An electrical box was .7 m southwest of T-160 with electrical lines extending south from the box. The paved surface was level in the area immediately surrounding T-160.

Summary of Background Research and Land Use: LCA records indicate the land-use in the region was confined to taro cultivation, fishpond farming, and salt-production. T-160 was located within a very large LCA (387) which was awarded to ABCFM (A.B. Mission) and was used for salt production. According to the 1883 Baldwin map, T-160 was located within an area where plots for salt production or taro cultivation were located, based on the LCA documentation for the surrounding area. Bishop's 1884 Honolulu map showed that T-160 was located within Kukuluae'o and was 312 m northeast of the shoreline. Monsarrat's 1897 Honolulu map showed some development north of T-160. Laniwai Street was 56 m north of T-160. By 1919, there was massive urban development (1919 War Map). 1927 US Coast aerial showed T-160 to be within a street grid, and the 1939-41 Army Air Corp aerial showed T-160 on a street alignment with warehouses to southwest. The development continued through 1953 (1933 and 1943 War Honolulu, 1953 Army Mapping Service Honolulu Map).

Previous archaeology within the vicinity of T-160 includes several studies. A reconnaissance-level archaeological assessment was performed about 70 m northeast of T-160 which concluded that the area may have been extensively utilized for fishpond farming and making salt (Chiogioji and Hammatt 1991). An archaeological monitoring project 240 m northwest from T-160 resulted in the discovery of a sub-surface cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were located within and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380) (Winieski and Hammatt 2000).

Documentation Limitations: T-160 was excavated to the coral shelf at a depth of 1.52 mbs. There were no factors that limited the documentation of T-160.

Stratigraphic Summary: The stratigraphy of T-160 consisted of fill overlying natural sediment. Observed strata included asphalt (Ia), sandy clay loam fill (Ib), very gravelly loamy sand fill (Ic), sandy clay fill (Id), sandy clay loam fill (Ie), coarse sand (If), and natural sandy clay (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of three bulk samples were collected from within T-160 including one sample from Stratum Ie between 0.89-1.12 mbs, Stratum If between 1.12-1.33 mbs and Stratum II between 1.33-1.52 mbs. All of the samples were wet-screened.

The sample from Stratum Ie and Stratum If did not contain significant material. The sample from Stratum II contained possible burned or carbonized organic material (5.0 g) and coal or slag (0.3 g). The results of sample analysis indicated the presence of historic material within Stratum II, which consisted of coal or slag.

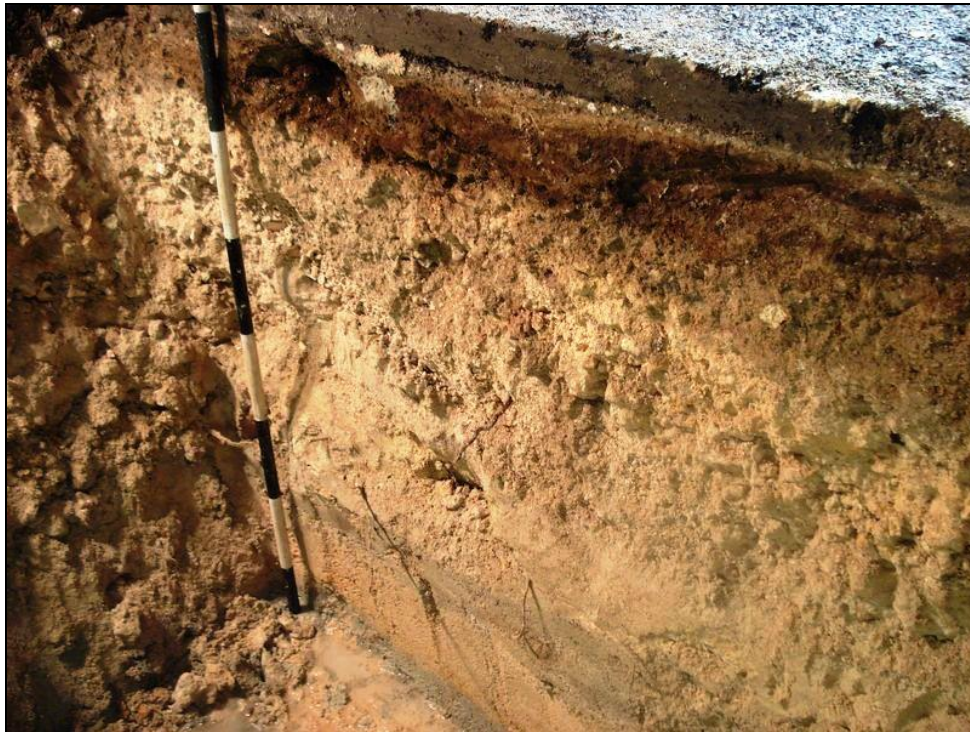
GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-160 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs and again around 0.5 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.5 mbs.

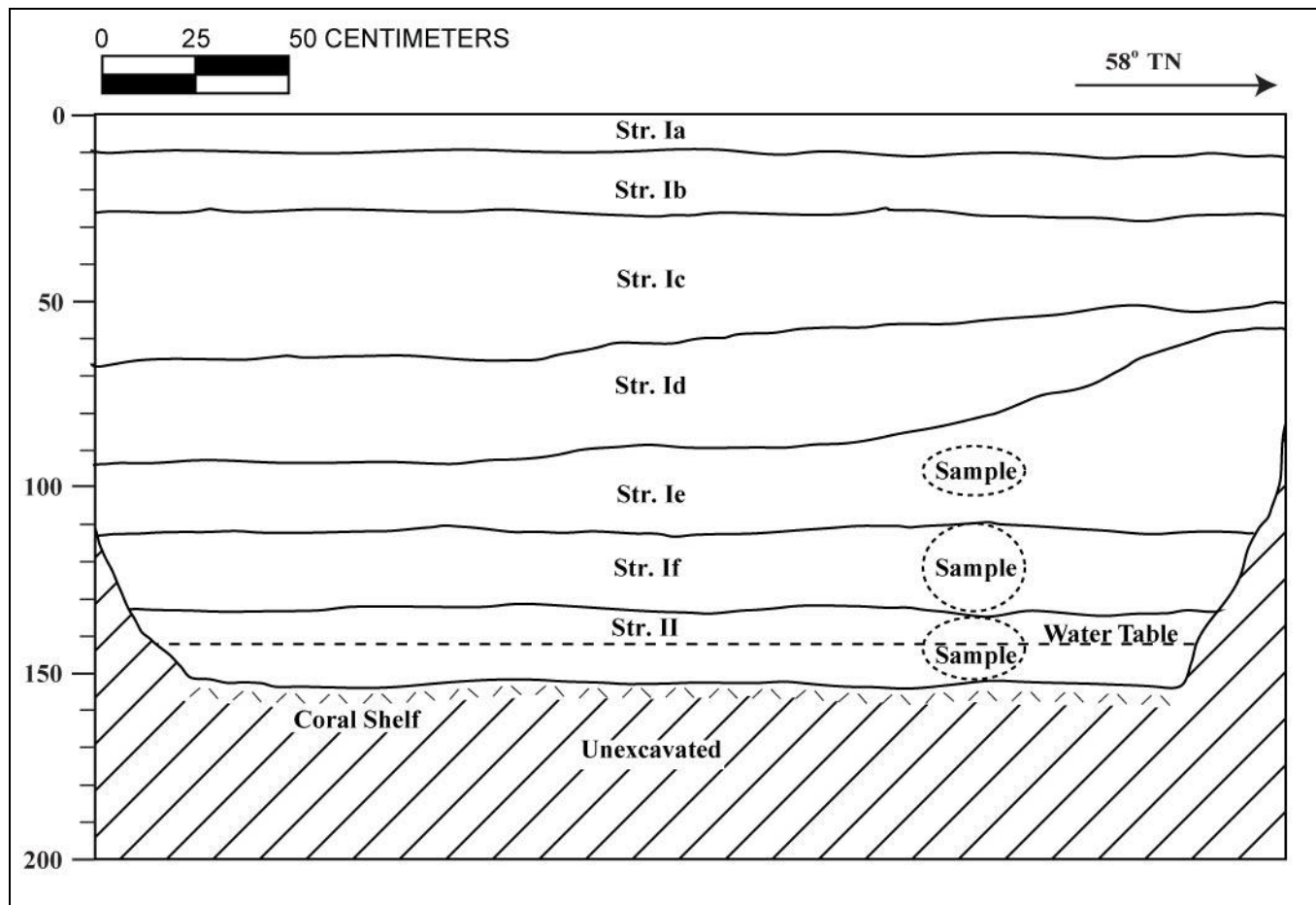
Summary: T-160 was excavated to the coral shelf at a depth of 1.52 mbs. The stratigraphy of T-160 consisted of fill (Ia-If) overlying natural sediment (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). A total of three bulk samples were collected from within T-160 including one sample from Stratum Ie between 0.89-1.12 mbs, Stratum If between 1.12-1.33 mbs and Stratum II between 1.33-1.52 mbs. The results of sample analysis indicated the presence of historic material within Stratum II, which consisted of coal or slag. No cultural resources were identified within T-160.



T-160 general location (view to east).



T-160 north profile wall (view to west).



T-160 northeast wall profile.

T-160 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-26	Fill; 7.5 YR 3/3 (dark brown); sandy clay loam; massive, moderate, fine, crumb structure; dry, weakly coherent consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; banded fill
Ic	26-66	Fill; 7.5 YR 8/3 (pink); very gravelly loamy sand; fine, granular structure; dry, weakly coherent consistency; non-plastic; marine origin; clear, wavy lower boundary; few, fine to very coarse roots; crushed coral cobbles, marine shell fill
Id	66-95	Fill; 7.5 8/1 (white); sandy clay; weak, fine, blocky structure; moist, very friable consistency; plastic; mixed origin; abrupt, smooth lower boundary; few, fine to very coarse roots
Ie	56-112	Fill; 10 YR 6/2 (light brownish gray); sandy clay loam; weak, medium, block structure; moist, very friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary; few, medium to very coarse roots; possible hydraulic fill
If	112-133	Fill; 7.5 YR 8/3 (pink); coarse sand; weak, medium to coarse, granular structure; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; possible hydraulic fill
II	133-152	Natural; GLEY 1 6/5G, (greenish gray); sandy clay; moderate, coarse, granular structure; wet, sticky consistency; slightly plastic; mixed origin; lower boundary not visible; natural sediment

3.59 Test Excavation 161 (T-161)

Ahupua'a:	Honolulu
LCA :	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	1.42 m
UTM:	618727 mE, 2355436 mN
Max Length/Width/Depth:	3.07 m / 0.97 m / 1.54 m
Orientation:	60 / 240° TN
Targeted Project Component:	Guideway Column
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 161 (T-161) was located within a landscaped area adjacent to the intersection of Halekauwila Street and Ward Avenue. An electrical line was approximately 0.75 m southeast and parallel to T-161. The test excavation was level to the surrounding surface and was on property owned by Victoria Ward Ltd.

Summary of Background Research and Land Use: LCA records indicate the land-use in the region was confined to taro cultivation, fishpond farming, and salt-production. T-160 was located within a very large LCA (387) which was awarded to ABCFM (A.B. Mission) and was used for salt production. According to the 1883 Baldwin map, T-160 was located within an area where plots for salt production or taro cultivation were located, based on the LCA documentation for the surrounding area. Bishop's 1884 Honolulu map showed that T-160 was located within Kukuluae'o and was 312 m northeast of the shoreline. Monsarrat's 1897 Honolulu map showed some development north of T-160. By 1919, there was massive urban development (1919 War Map). 1927 US Coast aerial showed T-160 to be within a street grid, and the 1939-41 Army Air Corp aerial showed T-160 on a street alignment with warehouses to southwest. The development continued through 1953 (1933 and 1943 War Honolulu, 1953 Army Mapping Service Honolulu Map).

Previous archaeology within the vicinity of T-161 includes several studies. A reconnaissance-level archaeological assessment was performed about 97 m northeast of T-161 which concluded that the area may have been extensively utilized for fishpond farming and making salt (Chiogioji and Hammatt 1991). An archaeological monitoring project within the same parcel and another parcel 265 m northwest from T-161 resulted in the discovery of a sub-surface cultural layer, *in situ* beach sand and volcanic cinder deposits below fill layers. Twenty human burials were encountered; eleven burials were located within and around Mother Waldron Park (SIHP # 50-80-14-5820), and nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380) (Winieski and Hammatt 2000).

Documentation Limitations: T-161 was excavated to below the water table at a depth of 1.54 mbs. There were no factors that limited the documentation of T-161.

Stratigraphic Summary: The stratigraphy consisted of fill overlying natural sediment. Observed strata included silty clay (Ia), gravelly silty clay loam (Ib), very gravelly medium sand

(Ic), natural silty clay (IIa), gravelly sandy clay loam (IIb), and fine medium sand (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sediment sample was collected from the excavation floor of Stratum III at 1.52-1.54 mbs. The sample was wet-screened. The sample from Stratum III contained naturally-occurring marine shell (1.9 g) and roots (0.4 g).

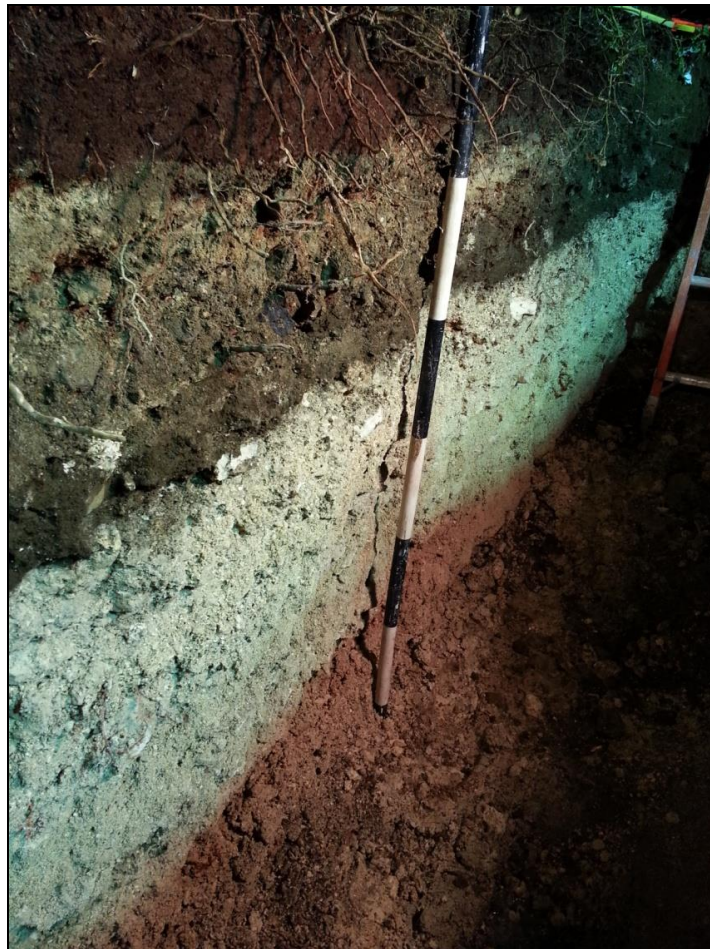
GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-161 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

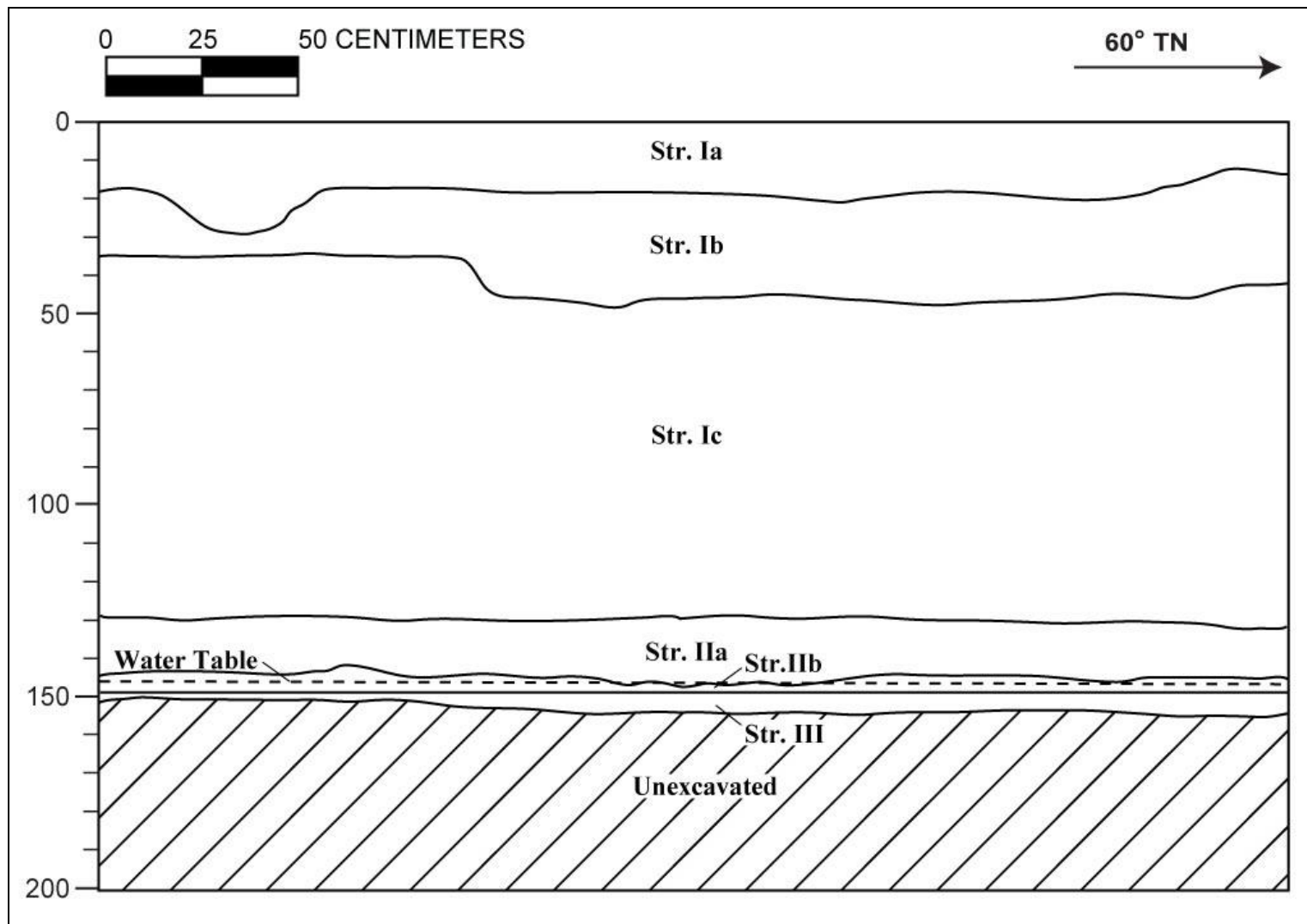
Summary: T-161 was excavated to below the water table at a depth of 1.54 mbs. The stratigraphy consisted of fill (Ia-Ib) overlying natural sediment (IIa-III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). One bulk sediment sample was collected from Stratum III at 1.52- 1.54 mbs. The sample was wet-screened. The sample from Stratum III contained naturally-occurring marine shell (1.9 g) and roots (0.4 g). No cultural resources were identified within T-161.



T-161 general location (view to north)



T-161 northwest profile wall, view



T-161 northwest wall profile.

T-161 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-30	Fill; 5 YR 3/4 (dark red brown); silty clay; weak, very fine, columnar structure; moist, very friable consistency; plastic; terrigenous origin; abrupt, wavy lower boundary; many, medium to coarse roots; modern A-Horizon soil for vegetation, contained plants, grass
Ib	11-45	Fill; 10 YR 4/2 (dark grayish brown); gravelly silty clay loam; weak, fine, granular structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, wavy lower boundary; many, medium roots
Ic	35-130	Fill; 2.5 Y 8/3 (pale yellow); very gravelly medium sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; few, very fine roots; crushed coral fill
Ila	130-145	Natural; 5 Y 5/2 (olive gray); silty clay; structureless, massive; wet, very sticky consistency; very plastic; marine origin; abrupt, wavy lower boundary; few, very fine roots; organic matting present in upper boundary
Ilb	143-149	Natural; 5 Y 6/1 (gray); gravelly sandy clay loam; structureless, massive; wet, sticky consistency; plastic; marine origin; abrupt, wavy lower boundary; few, fine roots
III	149-154	Natural; 5 Y 8/4 (pale yellow); fine to medium sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; Jaucas sand